Operations Guide

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Polycom® RealPresence® DMA® 7000 System

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Polycom® RealPresence DMA® 7000 System Overview

This chapter provides an overview of the Polycom® Distributed Media Application™ (RealPresence DMA®) 7000 system. It includes these topics:

Introduction to the Polycom RealPresence DMA System

The Polycom RealPresence DMA system is a highly reliable and scalable video collaboration infrastructure solution based on the Polycom® Proxias™ application server. The following topics introduce you to the system:

The Polycom RealPresence DMA System's Primary Functions

The primary functions of the Polycom RealPresence DMA system are described briefly below.

Conference Manager

The Polycom RealPresence DMA system's Conference Manager facilitates multipoint video conferencing. A multipoint video conference is one in which multiple endpoints are connected, with all participants able to see and hear each other. The endpoints connect to a *media server* (Multipoint Control Unit, or *MCU*), which processes the audio and video from each and sends the conference audio and video streams back to them.

Traditionally, such multipoint conferences had to be scheduled in advance, reserving ports on a specific MCU, in order to ensure the availability of resources. Conference Manager makes this unnecessary.

Conference Manager uses advanced routing policies to distribute voice and video calls among multiple MCUs, creating a single virtual resource pool. This greatly simplifies multipoint video conferencing resource management and uses MCU resources more efficiently.

The Polycom RealPresence DMA system integrates with your Microsoft® Active Directory®, automating the task of provisioning users with virtual meeting rooms (*VMRs*), which are available for use at any time for multipoint video conferencing. Combined with its advanced resource management, this makes reservationless (ad hoc) video conferencing on a large scale feasible and efficient, reducing or eliminating the need for conference scheduling.

The Polycom RealPresence DMA system's ability to handle multiple MCUs as a single resource pool makes multipoint conferencing services highly scalable. You can add MCUs on the fly without impacting end users and without requiring re-provisioning. The RealPresence DMA system can span a conference across two or more MCUs (called cascading), enabling the conference to contain more participants than any single MCU can accommodate.

The Conference Manager continually monitors the resources used and available on each MCU and intelligently distributes conferences among them. If an MCU fails, loses its connection to the system, or is taken out of service, the Polycom RealPresence DMA system distributes new conferences to the remaining MCUs. Every conference on the failed MCU is restarted on another MCU (provided there is space available). The consequences for existing calls in those conferences depend on whether they're H.323 or SIP:

- H.323 participants are *not* automatically reconnected to the conference. In order to rejoin the conference, dial-in participants simply need to redial the same number they used for their initial dial-in. Dial-out participants will need to be dialed out to again; the RealPresence DMA system doesn't automatically redial out to them.
- SIP participants are automatically reconnected to the conference on the new MCU. This includes both dial-in and dial-out SIP participants. No new dial-out is needed because the RealPresence DMA system maintains the SIP call leg to the participant and only has to re-establish the SIP call leg from the RealPresence DMA system to the MCU.

Call Server

The Polycom RealPresence DMA system's Call Server provides the following functionality:

- H.323 gatekeeper
- SIP registrar and proxy server
- H.323 <—> SIP transition gateway
- Dial plan and prefix services
- Device authentication
- Bandwidth management

The Call Server can also be integrated with a Juniper Networks Service Resource Controller (SRC) to provide bandwidth and QoS assurance services.

RealPresence® Platform API

The Polycom RealPresence DMA system optionally allows an API client application, developed by you or a third party, to access the Polycom RealPresence® Platform Application Programming Interface (API). This API access is licensed separately. It provides programmatic access to the Polycom RealPresence DMA system for the following:

- Provisioning
- Conference control and monitoring
- Call control and dial-out

- Billing and usage data retrieval
- Resource availability queries

The API uses XML encoding over HTTPS transport and adheres to a Representational State Transfer (REST) architecture.

To browse the RealPresence Platform API reference documentation, in your web browser's address field, type in the following URL (replacing <dma_hostname> with the hostname or IP address of your RealPresence DMA system):

http://<dma_hostname>/api/rest/documentation

Note: Asynchronous API communication

The API communicates asynchronously. Clients subscribing to event notifications via the API must be prepared to receive notifications out of order.

A Polycom RealPresence Resource Manager system can integrate with the RealPresence DMA system via the API. No separate license is needed in order for the RealPresence Resource Manager system to use the API. It provides the full programmatic access to the RealPresence DMA system described above and enables users of the RealPresence Resource Manager scheduling interface to:

- Schedule conferences using the RealPresence DMA system's MCU resources.
- Set up *Anytime* conferences. Anytime conferences are referred to as *preset dial-out* conferences in the RealPresence DMA system (see Edit Conference Room Dialog Box on page 317)

Note: Integration with a Resource Management System

Integrating the Polycom RealPresence Resource Manager system with the RealPresence DMA system via the API is separate and distinct from integrating the RealPresence DMA system with a Polycom CMA or RealPresence Resource Manager system.

- The former enables RealPresence Resource Manager users to obtain information from and use functionality of the RealPresence DMA system that would otherwise be accessible only in the RealPresence DMA system's management interface.
- The latter enables the RealPresence DMA system to retrieve site topology and user-to-device associations from the CMA or RealPresence Resource Manager system.

For convenience, however, when you integrate your RealPresence Resource Manager system to the RealPresence DMA system, the RealPresence DMA system automatically integrates itself back to the RealPresence Resource Manager system so that the RealPresence DMA system will have the site topology and user-to-device information that the RealPresence Resource Manager system expects it to have.

SVC Conferencing Support

This version of the Polycom RealPresence DMA system supports the Annex G extension of the H.264 standard, known as H.264 Scalable Video Coding (SVC), for both point-to-point and multipoint (VMR) calls.

SVC is sometimes referred to as layered media because the video streams consist of a base layer that encodes the lowest available quality representation plus one or more enhancement layers that each provide an additional quality improvement. SVC supports three dimensions of scalability: temporal (frames per second), spatial (resolution and aspect ratio), and quality (signal-to-noise ratio).

The video stream to a device can be tailored to fit the bandwidth available and device capabilities by adjusting the number of enhancement layers sent to the device.

For multipoint conferencing, the MCU doesn't have to do processing-intensive mixing and transcoding to optimize the experience for each device. Instead, it simply passes the video stream from each device to each device, including the enhancement layers that provide the best quality the device can support.

Polycom's SVC solution focuses on the temporal and spatial dimensions. It offers a number of advantages over standard AVC conferencing, including:

- Improved video quality at lower bandwidths
- Improved audio and video error resiliency (good audio quality with more than 50% packet loss, good video quality with more than 25% packet loss)
- Lower end-to-end latency (typically less than half that of AVC)
- More efficient use of bandwidth
- Lower infrastructure cost and operational expenses
- Easier to provision, control, and monitor
- Better security (end-to-end encryption)

Polycom's SVC solution is supported by the Polycom RealPresence Platform and Environments, including the latest generation of Polycom MCUs and RealPresence room, personal, desktop, and mobile endpoints. Existing RMX MCUs with MPMx cards can be made SVC-capable with a software upgrade, and doing so triples their HD multipoint conferencing capacity.

RealPresence Collaboration Server 800s MCUs support mixed-mode (SVC+AVC) conferences. Both SVC and AVC endpoints can join the conference, and each gets the appropriate experience: SVC endpoints get SVC mode and get a video stream for each AVC participant; AVC endpoints get a single Continuous Presence (CP) video stream of the participants (both AVC and SVC) supplied by the MCU.

When the Polycom RealPresence DMA system selects an MCU that doesn't support SVC for a conference configured for mixed mode, it starts the conference as an AVC-only conference (all SVC-capable endpoints also support AVC). But if the MCU supports SVC but not mixed mode (RMX 7.8), the conference fails to start.

Refer to your RealPresence Collaboration Server or RMX documentation for important information about the MCU's implementation of SVC conferencing and its configuration, limitations, and constraints.

See also:

Introduction to the Polycom RealPresence DMA System on page 15

The Polycom RealPresence DMA System's Three Configurations

Depending on your organization's needs, you can deploy the Polycom RealPresence DMA system in one of the following three configurations.

Two-server Cluster Configuration

The Polycom RealPresence DMA system is designed to be deployed as a pair of co-located redundant servers that share the same virtual IP address(es). The two-server cluster configuration of the Polycom RealPresence DMA system has no single point of failure within the system that could cause the service to become unavailable.

The two servers communicate over the private network connecting them. To determine which one should host the public virtual IP address, each server uses three criteria:

- Ability to ping its own public physical address

- Ability to ping the other server's public physical address
- Ability to ping the default gateway

In the event of a tie, the server already hosting the public virtual address wins.

Failover to the backup server takes about five seconds in the event of a graceful shutdown and about twenty seconds in the event of a power loss or other failure. In the event of a single server failure, two things happen:

- All calls that are being routed through the failed server are terminated (including SIP calls, VMR calls, and routed mode H.323 calls). These users simply need to redial the same number, and they're placed back into conference or reconnected to the point-to-point call they were in. The standby server takes over the virtual signaling address, so existing registrations and new calls are unaffected.
- Direct mode H.323 point-to-point calls are not dropped, but the bandwidth management system loses track of them. This could result in overuse of the available network bandwidth.
- If the failed server is the active web host for the system management interface, the active user interface sessions end, the web host address automatically migrates to the remaining server, and it becomes the active web host. Administrative users can then log back into the system at the same URL. The system can always be administered via the same address, regardless of which server is the web host.

The internal databases within each Polycom RealPresence DMA system server are fully replicated to the other server in the cluster. If a catastrophic failure of one of the database engines occurs, the system automatically switches itself over to use the database on the other server.

Single-server Configuration

The Polycom RealPresence DMA system is also available in a single-server configuration. This configuration offers all the advantages of the Polycom RealPresence DMA system except the redundancy and fault tolerance at a lower price. It can be upgraded to a two-server cluster at any time.

This manual generally assumes a redundant two-server cluster. Where there are significant differences between the two configurations, those are spelled out.

Superclustering

To provide geographic redundancy and better network traffic management, up to five geographically distributed Polycom RealPresence DMA system clusters (two-server or single-server) can be integrated into a *supercluster*. All five clusters can be Call Servers (function as gatekeeper, SIP proxy, SIP registrar, and gateway). Up to three can be designated as Conference Managers (manage an MCU resource pool to host conference rooms).

The superclustered Polycom RealPresence DMA systems can be centrally administered and share a common data store. Each cluster maintains a local copy of the data store, and changes are replicated to all the clusters. Most system configuration is supercluster-wide. The exceptions are cluster-specific or server-specific items like network settings and time settings.

Note: Clusters vs. Superclusters

Technically, a standalone Polycom RealPresence DMA system (two-server or single-server) is a supercluster that contains one cluster. All the system configuration and other data that's shared across a supercluster is kept in the same data store. At any time, another Polycom RealPresence DMA system can be integrated with it to create a two-cluster supercluster that shares its data store.

It's important to understand the difference between two co-located servers forming a single RealPresence DMA system (cluster) and two geographically distributed RealPresence DMA clusters (single-server or two-server) joined into a supercluster.

A single two-server RealPresence DMA system (cluster) has the following characteristics:

- A single shared virtual IP address and FQDN, which switches from one server to the other when necessary to provide local redundancy and fault tolerance.
- A single management interface and set of local settings.
- Ability to manage a single territory, with no territory management backup.
- A single set of Call Server and Conference Manager responsibilities.

A supercluster consisting of two RealPresence DMA clusters (single-server or two-server) has the following characteristics:

- Separate IP addresses and FQDNs for each cluster.
- Separate management interfaces and sets of local settings for each cluster.
- Ability for each cluster to manage its own territory, with another cluster able to serve as backup for that territory.

Different Call Server and Conference Manager responsibilities for each territory and thus each cluster.

System Capabilities and Constraints

The following capabilities and constraints apply to the entire supercluster:

- Number of sites: 500
- Number of subnets: 5000
- Number of clusters in a supercluster: 5 (not counting an integrated Polycom RealPresence Resource Manager or CMA system)
- Number of MCUs enabled for conference rooms: 64
- Number of territories enabled for conference rooms (Conference Manager enabled): 3
- Number of concurrent VMR calls: 1200 per cluster (Conference Manager), up to 3600 total
- Number of concurrent SIP<->H.323 gateway calls: 500
- Size of Active Directory supported: 1,000,000 users and 1,000,000 groups (up to 10,000 groups may be imported)

The following capabilities and constraints apply to each cluster in the supercluster:

- Number of registrations: 15000
- Number of contacts registered to a Microsoft Lync 2013 server: 25,000
- Number of concurrent H.323 calls: 5000
- Number of concurrent SIP calls: 5000
- Total number of concurrent calls: 5000
- Number of network usage data points retained: 8,000,000

- Number of IRQ messages sent per second: 100
- Number of history records retained per cluster:
  - 500,000 registration history
  - 2,000,000 registration signaling history
  - 500,000 call history
  - 12,500,000 call signaling history
  - 200,000 conference history
  - 10,000 CDR export history

System Port Usage

The table below lists the inbound ports that may be open on the Polycom RealPresence DMA system, depending on signaling and security settings, integrations, and system configuration.

Port	Protocol	Description
22	TCP	SSH. Only available if Linux console access is enabled (see Security Settings on page 50).
53	TCP/UDP	DNS. Only available if the embedded DNS server is enabled (see Embedded DNS on page 274).
80	TCP	HTTP. Redirects to 443 (HTTP access is not allowed). Disabled in maximum security mode.
123	UDP	NTP. Only available if an NTP server is specified (see Time Settings on page 69).
161	UDP	SNMP. Default port; can be changed or disabled (see Configure SNMP on page 420).
443	TCP	HTTPS. Redirects to 8443.
1718	UDP	H.323 RAS. Default port; can be changed (see Signaling Settings on page 72).
1719	UDP	H.323 RAS. Default port; can be changed (see Signaling Settings on page 72).
1720	TCP	H.323 H.225 signaling. Default port; can be changed (see Signaling Settings on page 72).
4449	TCP	LDAP. OpenDJ replication (superclustering).
5060	TCP/UDP	Unencrypted SIP. Default port; can be changed or disabled (see Signaling Settings on page 72).
5061	TCP	SIP TLS. Default port; can be changed (see Signaling Settings on page 72).
8080	TCP	HTTP. Redirects to 443 (HTTP access is not allowed). Disabled in maximum security mode.
8443	TCP	HTTPS. Management interface access.

Port	Protocol	Description
8444	TCP	HTTPS. Supercluster communication.
8989	TCP	LDAP. OpenDJ replication (superclustering).
9090	TCP	HTTPS. Upgrade status monitoring (only while upgrade process is running).
36000-61000	TCP	Ephemeral port range.

The table below lists the remote ports to which the Polycom RealPresence DMA system may connect, depending on signaling and security settings, integrations, and system configuration.

Port	Protocol	Description
80	TCP	HTTP. MCUs, Exchange Web Services (calendaring). Only used if unencrypted connections are enabled (see Security Settings on page 50).
162	TCP/UDP	SNMP notifications (Traps or Informs). Only used if SNMP is enabled and configured to send notifications (see Configure SNMP on page 420).
389	TCP	LDAP. Active Directory integration.
443	TCP	HTTPS. MCUs, Exchange Web Services (calendaring).
1718	UDP	H.323 RAS. Default port; can be changed (see Signaling Settings on page 72).
1719	UDP	H.323 RAS. Default port; can be changed (see Signaling Settings on page 72).
1720	TCP	H.323 H.225 signaling. Default port; can be changed (see Signaling Settings on page 72).
3268	TCP	Global Catalog. Active Directory integration.
3269	TCP	Secure Global Catalog. Active Directory integration.
4449	TCP	OpenDJ replication (superclustering).
5060	TCP/UDP	Unencrypted SIP. Default port; can be changed or disabled (see Signaling Settings on page 72).
5061	TCP	SIP TLS. Default port; can be changed (see Signaling Settings on page 72).
8443	TCP	HTTPS. Management interface access.
8443	TCP	HTTPS. Hourly transmission of system usage data to the address customerusagedatacollection.polycom.com. This data is only sent if the Automatically Send Usage Data feature is enabled (see Automatically Send Usage Data on page 85).
8444	TCP	Supercluster communication.

Port	Protocol	Description
8989	TCP	OpenDJ replication (superclustering).
36000-61000	TCP	Ephemeral port range.

Polycom Solution Support

Polycom Implementation and Maintenance services provide support for Polycom solution components only. Additional services for supported third-party Unified Communications (UC) environments integrated with Polycom solutions are available from Polycom Global Services and its certified Partners. These additional services will help customers successfully design, deploy, optimize, and manage Polycom visual communications within their UC environments.

Professional Services for Microsoft Integration is mandatory for Polycom Conferencing for Microsoft Outlook and Microsoft Office Communications Server or Lync Server 2010 integrations. For more information, please visit www.polycom.com/services/professional_services/ or contact your local Polycom representative.

Working in the Polycom RealPresence DMA System

This section includes some general information you should know when working in the Polycom RealPresence DMA system.

Accessing the Polycom RealPresence DMA System

The Polycom RealPresence DMA system's management interface is accessed by pointing a compatible browser equipped with Adobe® Flash® Player to the system's host name or IP address (a two-server cluster or an IPv6-only single-server cluster has a virtual host name and IP address, and we strongly recommend always using the virtual address). Minimum requirements:

- Microsoft Internet Explorer® 7 or newer, or Mozilla Firefox® 3 or newer, or Google Chrome 11 or newer
- Adobe Flash Player 9.0.124 or newer
- 1280x1024 minimum display resolution (1680x1050 or greater recommended)

Note: Adobe Flash Player considerations

The Polycom RealPresence DMA system's Flex-based management interface requires Adobe Flash Player. For stability and security reasons, we recommend always using the latest version of Flash Player.

Even so, be aware that your browser's Flash plugin may hang or crash from time to time. Your browser should alert you when this happens and enable you to reload the plugin. In some cases, you may need to close and restart your browser.

In the Google Chrome browser, use the Adobe Flash plugin, not the built-in Flash support.

Field Input Requirements

While every effort was made to internationalize the Polycom RealPresence DMA system, not all system fields accept Unicode entries. If you work in a language other than English, be aware that some fields accept only ASCII characters.

Settings Dialog Box

The **Settings** dialog box opens when you click the  button to the right of the menus. It displays your user name and the address of the RealPresence DMA server you're logged into.

The **Settings** dialog box lets you change:

- The maximum number of columns in the **Dashboard**. Note that this is a *maximum*, not a fixed value. The panes have a minimum width, and they arrange themselves to best fit your browser window. Depending on the size of your browser window, there may be fewer columns than the maximum you select. For instance, at the minimum supported display resolution of 1280x1024, only two columns can be displayed.
- The text size used in the system interface. Note that larger text sizes will affect how much you can see in a given window or screen size and may require frequent scrolling.

Polycom RealPresence DMA System User Roles and Their Access Privileges

The Polycom RealPresence DMA system has three system user roles (see User Roles Overview on page 301) that provide access to the management and operations interface and, if available, the separately licensed RealPresence Platform Application Programming Interface (API). The functions you can perform and parts of the interface you can access depend on your user role or roles, as shown in the following table.

For information on access privileges to API resources, see the RealPresence DMA system API reference documentation included with your system at the following URL:

`https://<IP_address_or_hostname_of_system>:8443/api/rest/documentation`

Menu/Icon	Admin	Provisioner	Auditor
 Home. Returns to the Dashboard.	•	•	•
Network >			
Active Calls	•	•	
Endpoints	•	•	
RealPresence DMAs [1]	•	•	

Menu/Icon	Admin	Provisioner	Auditor
MCU > MCUs[1]	•	•	
MCU > MCU Pools[1]	•	•	
MCU > MCU Pool Orders[1]	•	•	
Site Statistics[1]	•	•	
Site Link Statistics[1]	•	•	
Site Topology > Sites[1]	•	•	
Site Topology > Site Links[1]	•	•	
Site Topology > Site-to-Site Exclusions[1]	•	•	
Site Topology > Network Clouds[1]	•	•	
Site Topology > Territories[1]	•	•	
External Gatekeeper[1]	•	•	
External SIP Peer[1]	•	•	
External H.323 SBC[1]	•	•	
User >			
Users [2]	•	•	
Groups	•		
Login Sessions[1]	•	•	
Change Password	•	•	•
Reports >			
Alert History	•	•	•
Call History	•	•	•
Conference History	•	•	•
Registration History	•	•	•
Network Usage	•	•	
Microsoft Active Directory Integration[3]	•		
Enterprise Passcode Errors[3]	•		
Orphaned Groups and Users	•	•	
Conference Room Errors[3]	•		

Menu/Icon	Admin	Provisioner	Auditor
Maintenance			
System Log Files[4]	•		•
Troubleshooting Utilities > Ping, Traceroute, Top, I/O Stats, SAR, NTP Status	•		
Shutdown and Restart	•		
Software Upgrade	•		
Backup and Restore	•		
Admin > Conference Manager >			
Conference Settings	•		
Conference Templates	•		
IVR Prompt Sets	•		
Shared Number Dialing	•		
Admin > Call Server >			
Call Server Settings	•		
Domains	•		
Dial Rules	•		
Hunt Groups	•	•	
Registration Policy	•		
Device Authentication	•		
Prefix Service[1]	•	•	
Embedded DNS	•		
History Retention Settings	•		•
Admin > Integrations >			
Microsoft Active Directory	•		
Microsoft Exchange Server	•		
Resource Management System	•		
Juniper Networks SRC	•		

Menu/Icon	Admin	Provisioner	Auditor
Admin > Login Policy Settings >			
Local Password	•		
Session	•		
Local User Account	•		
Banner	•		
Access Policy Settings	•		
Admin > Local Cluster >			
Network Settings	•		
Signaling Settings	•		
Time Settings	•		
Licenses	•		
Logging Settings	•		•
SNMP Settings	•		
Security Settings	•		
Certificates	•		
Help >			
About RealPresence DMA 7000	•	•	•
Help Contents	•	•	•
 Settings. Displays Settings dialog box.	•	•	•
 Log Out. Logs you out of the Polycom RealPresence DMA system.	•	•	•
 Help. Opens the online help topic for the page you're viewing.	•	•	•

1. Provisioners have view-only access.
2. Must be an enterprise user to see enterprise users. Provisioners can't add or remove roles or endpoints, and can't edit user accounts with explicitly assigned roles (Administrator, Provisioner, or Auditor), but can manage their conference rooms.
3. Must be an enterprise user to view this report.
4. Administrators can't delete log archives.

Open Source Software

License Information

Refer to the *Polycom RealPresence DMA 7000 System Offer of Open Source Software* for a list of the open source software packages used in the Polycom RealPresence DMA system, the applicable license for each, and the internet address where you can find it. To obtain the source code for any of these packages, email your request to Open.Source@Polycom.com.

Modifying Open Source Code

The Polycom RealPresence DMA system software is not combined with or otherwise linked to any open source libraries, but the CentOS software is. The LGPL v2.1 license allows you to modify the LGPL code included with CentOS, recompile the modified code, and re-link it with the CentOS code. Note that although you're free to modify the included LGPL modules in any way you wish, we cannot be responsible if the changes you make impair the system.

To replace an LGPL library with your modified version

1. Obtain the source code for the module you want to modify.
2. Modify the source code and compile it.
3. Go to **Admin > Local Cluster > Security Settings**, select **Allow Linux console access**, and click **Update**.
4. Contact Polycom Global Services for the root password for the Polycom RealPresence DMA server.
5. Use ssh to log into the server as root.
6. Upload the modified software via wget or scp.
7. Find the module you're replacing and install the new version to that location.
8. Reboot the system.

Polycom® RealPresence DMA® System Initial Configuration Summary

This chapter describes the configuration tasks required to complete your implementation of a new Polycom® RealPresence® Distributed Media Application™ (DMA®) 7000 system once installation and initial network configuration are complete.

This chapter assumes you've completed the server configuration procedure in the *Getting Started Guide* (available at support.polycom.com), logged into the Polycom RealPresence DMA system's management interface, and verified that the **Supercluster Status** pane of the **Dashboard** shows (for a two-server configuration) two servers in the cluster, with healthy enterprise and private network status for both.

Initial configuration includes the following topics:

System configuration

- Add Required DNS Records for the Polycom RealPresence DMA System
- License the Polycom RealPresence DMA System
- Set Up Signaling
- Configure the Call Server and Optionally Create a Supercluster
- Set Up Security
- Set Up MCUs
- Connect to Microsoft Active Directory®
- Set Up Conference Templates

Confirming configuration

- Test the System

Each topic describes the task, provides background and overview information for it, and where appropriate, links to specific step-by-step procedures to follow in order to complete the task.

Note: Optional Configuration Tasks

These topics outline the configuration tasks that are generally required. You may wish to complete other optional configuration tasks, including:

- Enable cascading of conferences (see About Cascading on page 193).
- Configure calendaring service (see Microsoft Exchange Server Integration on page 175).

Integrate with a Juniper Networks SRC Series Session and Resource Control module to provide bandwidth assurance services (see Juniper Networks SRC Integration on page 183).

Add Required DNS Records for the Polycom RealPresence DMA System

Note: Consult an Expert

If you're not familiar with DNS administration, the creation of various kinds of DNS resource records (A/AAAA,NAPTR, NS, and SRV), your enterprise's DNS implementation, and tuning for load balancing (if needed), please consult with someone who is.

Your Polycom RealPresence DMA system must be accessible by its host name(s), not just its IP address(es), so you (or your DNS administrator) must create A (address) resource records (RRs) for IPv4 and/or AAAA records for IPv6 on your DNS server(s).

A/AAAA records that map each physical host name to the corresponding physical IP address and each virtual host name to the corresponding virtual IP address are mandatory.

Note: Fully Qualified Domain Names

Depending on local DNS configuration, a host name could be the Polycom RealPresence DMA system's fully qualified domain name (FQDN) or a shorter name that DNS can resolve.

For some features, such as Microsoft Exchange Server integration, it's imperative that the FQDN can be resolved in DNS, especially by the Exchange server.

The DNS server(s) should also have entries for your Microsoft® Active Directory® server (if different from the DNS server) and any external gatekeepers or SIP peers.

You may need to create additional DNS records as described below.

Additional DNS Records for SIP Proxy

To support the use of your Polycom RealPresence DMA system as a SIP proxy server and ease future network administrative burdens, create the following DNS records (for each cluster in a supercluster, if applicable):

- Optionally, NAPTR records that describe the transport protocols supported by the SIP proxies at a domain and identify the preferred protocol. Configure these statically to match the system's SIP transport protocol configuration.

- SRV records for each transport protocol that identify the host names of the SIP proxies that service a particular domain. Configure these statically to point to the host names of the Call Servers in the domain. Here are example records for two clusters:

```
_sips._tcp.example.com. 86400 IN SRV 10 1001 5061 dma-asia.example.com.
_sips._tcp.example.com. 86400 IN SRV 10 1002 5061
dma-europe.example.com.
_sip._tcp.example.com.  86400 IN SRV 20 1001 5060 dma-asia.example.com.
_sip._tcp.example.com.  86400 IN SRV 20 1002 5060
dma-europe.example.com.
_sip._udp.example.com.  86400 IN SRV 30 1001 5060 dma-asia.example.com.
_sip._udp.example.com.  86400 IN SRV 30 1002 5060
dma-europe.example.com.
```

To enable access from the public internet, create corresponding SRV records, visible from outside the firewall, for the public address of each SIP session border controller (SBC).

For more information about the use of DNS in SIP, refer to RFCs 3263 and 2782.

Additional DNS Records for the H.323 Gatekeeper

To support the use of your Polycom RealPresence DMA system as an H.323 gatekeeper and ease future network administrative burdens, create SRV records that identify the host names of the gatekeepers that service a particular domain. These records are necessary in order to enable the optional inbound URL dialing feature. Configure them statically to point to the host names of the Call Servers in the domain. Here are example records for two clusters:

```
_h323ls._udp.example.com.  86400 IN SRV 0 1 1719 dma-asia.example.com.
_h323ls._udp.example.com.  86400 IN SRV 0 1 1719
dma-europe.example.com.
_h323cs._tcp.example.com.  86400 IN SRV 0 1 1720 dma-asia.example.com.
_h323cs._tcp.example.com.  86400 IN SRV 0 1 1720
dma-europe.example.com.
```

To enable access from the public internet, create corresponding SRV records, visible from outside the firewall, for the public address of each H.323 session border controller (SBC).

For more information about the use of DNS in H.323, refer to the H.323 specification, Annex O, and the H.225.0 specification, Appendix IV.

Additional DNS Records for the Optional Embedded DNS Feature

To support DNS publishing by your Polycom RealPresence DMA system's embedded DNS servers (see Embedded DNS on page 274), a DNS NS record is needed for the physical host name of each server in each cluster in the supercluster. These records identify the Polycom RealPresence DMA system's embedded DNS servers as authoritative for the specified logical host name. The logical host name you

specify is the one in the **Call server sub-domain controlled by RealPresence DMA** field on the **Embedded DNS** page. Here are example records for two two-server clusters:

```
callservers.example.com. 86400 IN NS dma-asia-server1.example.com.
callservers.example.com. 86400 IN NS dma-asia-server2.example.com.
callservers.example.com. 86400 IN NS dma-europe-server1.example.com.
callservers.example.com. 86400 IN NS dma-europe-server2.example.com.
```

Note: Virtual Host Names Cannot Have NS Records
NS records for the virtual host names must not exist.

Your enterprise DNS must also have the zone callservers.example.com defined and be configured to forward requests for names in that zone to any of the clusters in the supercluster. The way you do this depends on the DNS server software being used.

Queries to the enterprise DNS for callservers.example.com are referred to the specified RealPresence DMA clusters. Their embedded DNS servers create and manage A records for each site in the site topology. When responsibility for a site moves from one cluster to another, the A records are updated so that the site's domain name is mapped to the new cluster.

Verify That DNS Is Working for All Addresses

To confirm that DNS can resolve all the host names and/or FQDNs, ping each of them, either from a command prompt on the PC you're using to access the system or from one of the clusters you're setting up (go to **Troubleshooting Utilities > Ping**).

If you have access to a Linux PC and are familiar with the dig command, you can use it to query the enterprise DNS server to verify that all the records (A/AAAA, NS, and SRV) are present and look correct.

License the Polycom RealPresence DMA System

A Polycom RealPresence DMA system is licensed at the cluster level (single-server or two-server). A cluster's license specifies:

- The maximum number of concurrent calls that can touch the cluster. In a supercluster configuration, note that:
  - A single call may touch more than one cluster. It consumes a license on each cluster it touches.
  - Each cluster may be licensed for a different number of calls.
  - If your superclustering strategy (see About Superclustering on page 226) calls for a cluster to be primary for one territory and backup for another, it must be licensed for the call volume expected when it has to take over the territory for which it's the backup.
- Whether access to the RealPresence® Platform Application Programming Interface (API) is enabled.

  The API provides an API client application with programmatic access to the Polycom RealPresence DMA system (see RealPresence® Platform API on page 16). In a supercluster, all clusters must have the same API licensing status.

Note: API Licenses

An API license isn't required in order for a Polycom RealPresence Resource Manager system to access the API. It's only needed for a client application that you or a third party develop.

License the RealPresence DMA System, Appliance Edition

You should have received either one or two license numbers for each cluster, depending on whether you ordered a single-server or two-server cluster. You must obtain an activation key code for each server from the Polycom Resource Center (PRC):

1. Enter the server's serial number and the license number that you were given for that server.

   The PRC generates an activation key for that server.
2. For a two-server cluster, repeat the process using the other server's serial number and its license number.
3. On the **Licenses** page of the RealPresence DMA system, install the activation keys to activate the licenses for your system (see Licenses on page 70).

Caution: Do Not Generate Both Activation Keys from the Same Physical Server

An activation key is linked to a specific server's serial number. For a two-server cluster, you must generate the activation key for each server using that server's serial number. Licensing will fail if you generate both activation keys from the same server serial number.

License the RealPresence DMA System, Virtual Edition

The RealPresence DMA Virtual Edition is deployed and licensed through Polycom RealPresence Platform Director. You can view the licensing information for your system from the RealPresence DMA system user interface on the **Admin > Local Cluster > Licenses** page.

See the *RealPresence Platform Director System Administrator's Guide* for more information.

Note: Local Cluster Not Supported with Virtual Edition

The RealPresence DMA Virtual Edition does not support a two-server local cluster configuration. However, superclustering of individual RealPresence DMA Virtual Edition instances is fully supported in a virtual environment.

Set Up Signaling

Signaling setup includes configuring the following options:

- Enable H.323 signaling so that the Polycom RealPresence DMA system's Call Server operates as a gatekeeper, which may include:
  - Enable gatekeeper discovery via H.323 multicast.
  - Enable and configure H.235 device authentication.
- Enable SIP signaling so that the Polycom RealPresence DMA system's Call Server operates as a SIP registrar and proxy server, which may include:
  - Configure whether to support unencrypted SIP and whether to require certificate validation for TLS.
  - Enable pass-through of ANAT signaling (RFC 4091 and RFC 4092).

- Enable and configure SIP digest authentication.
- Enable and configure special handling for untrusted (“unauthorized” or “guest”) calls from SIP session border controllers (SBCs).

To set up signaling, follow the procedure in Configure Signaling on page 83.

Configure the Call Server and Optionally Create a Supercluster

Configuring the Polycom RealPresence DMA system’s Call Server function consists of the following high-level tasks:

1. Integrate with a Polycom RealPresence Resource Manager or CMA system (see Resource Management System Integration on page 178) or enter site topology information (see Site Topology on page 278).
2. If deploying a supercluster of multiple geographically distributed Polycom RealPresence DMA clusters:
   a. Set the **Security Configuration** page security options before superclustering (see Security Settings on page 50). But wait until after superclustering to do the rest of the security setup tasks.
   b. Depending on security settings, you may need to install certificates before superclustering (see Certificate Procedures on page 46).
   c. Create a supercluster (see About Superclustering on page 226) and configure supercluster options.
3. Create territories and assign sites to them (if you integrated with a Polycom RealPresence Resource Manager or CMA system, this must be done on that system). Assign the primary and backup cluster responsible for each territory, and designate which territories can host conference rooms (see Territories on page 294).
4. Add any external devices, such as a neighbor gatekeeper or SIP peer (see Call Server Configuration on page 233).
5. Configure the dial plan (see Dial Rules on page 239).

Set Up Security

The first step in securing your Polycom RealPresence DMA system is to locate it in a secure data center with controlled access, but that topic is beyond the scope of this document.

Secure setup of the Polycom RealPresence DMA system consists of the following high-level tasks (some of which assume you’re integrating with Active Directory and some of which overlap with other initial setup topics):

1. As the default local administrative user (admin), create a local user account for yourself with the Administrator role, log in using that account, and delete the admin user account. See Adding Users Overview on page 302 and Users Procedures on page 321.
2. Create the Active Directory service account (read-only user account) that the Polycom RealPresence DMA system will use to read and integrate with Active Directory. See Active Directory Integration Procedure on page 157.

3 Assign the Administrator role to your named enterprise account, and remove the Polycom RealPresence DMA system's user roles (see User Roles Overview on page 301) from the service account used to integrate with Active Directory. See Connect to Microsoft Active Directory® on page 36 and Microsoft Active Directory® Integration on page 152.

4 Log out and log back in using your enterprise user ID and password.

5 Verify that the expected enterprise users are available in the Polycom RealPresence DMA system and that conference room IDs were successfully created for them. If necessary, adjust integration settings and correct errors. See Microsoft Active Directory® Integration on page 152, Users Procedures on page 321, and Conference Room Errors Report on page 412.

6 Obtain and install a security certificate from a trusted certificate authority. See Security Certificates Overview on page 39 and Certificate Procedures on page 46.

7 Configure as needed various login policy settings (see Login Policy Settings on page 57) and optionally, a management access whitelist (see Access Policy Settings on page 60).

8 Document your current configuration for comparison in the future. We recommend saving screen captures of all the configuration pages.

9 Manually create a backup, download it, and store it in a safe place. See Backing Up and Restoring on page 374.

Set Up MCUs

Note: MCUs and RealPresence DMA System Interaction

The Polycom RealPresence DMA system can interact with MCUs, or media servers, in either or both of the following two ways:

- MCUs may be made available to system's Conference Manager to manage for multi-point conferencing (hosting virtual meeting rooms, or VMRs).
- MCUs may be registered with the system's Call Server as standalone MCUs and/or gateways.

This configuration summary assumes you want to do both.

Make sure your MCUs are configured to accept encrypted (HTTPS) management connections (required for maximum or high security mode).

Make sure that each MCU is in a site belonging to a territory for which the Polycom RealPresence DMA system is responsible. If you're deploying a supercluster (see Configure the Call Server and Optionally Create a Supercluster on page 34 and About Superclustering on page 226), make sure that each territory has a primary and backup cluster assigned to it. If the primary cluster becomes unavailable, the MCUs registered to it can re-register to the backup.

If you're deploying a supercluster, verify that you've enabled the hosting of conference rooms in the right territories and assigned clusters to those territories. See Configure the Call Server and Optionally Create a Supercluster on page 34.

Standalone MCUs can register themselves to the Polycom RealPresence DMA system's Call Server. To make an MCU available as a conferencing resource, either add it to the appropriate Polycom RealPresence DMA cluster's Conference Manager manually or, if it's already registered with the Call Server, edit its entry to enable it for conference rooms and provide the additional configuration information required. See MCU Management on page 124.

You must organize MCUs configured as conferencing resources into one or more MCU pools (logical groupings of media servers). Then, you can define one or more MCU pool orders that specify the order of preference in which MCU pools are used.

Note: Resource Management and MCU Pools

If you have a Polycom RealPresence Resource Manager system that's going to use the RealPresence DMA system API to schedule conferences on the RealPresence DMA system's conferencing resources (MCU pools), you must create MCU pools and pool orders specifically for the use of the RealPresence Resource Manager system. The pool orders should be named in such a way that:

- They appear at the top of the pool order list presented in the RealPresence Resource Manager system.
- Users of that system will understand that they should choose one of those pool orders.

If the RealPresence Resource Manager system is also going to be used to directly schedule conferences on MCUs, those MCUs should not be part of the conferencing resources (MCU pools) available to the RealPresence DMA system.

Every conference room (VMR) is associated with an MCU pool order. The pool(s) to which an MCU belongs, and the pool order(s) to which a pool belongs, are used to determine which MCU is used to host a conference. See MCU Pools on page 142 and MCU Pool Orders on page 145 for information about how to use pools and pool orders, as well as the rules that the system uses to choose an MCU for a user.

The Polycom RealPresence DMA system uses conference templates to define the conferencing experience associated with a conference room or enterprise group. You can create standalone templates (recommended), setting the conferencing parameters directly in the Polycom RealPresence DMA system, or link templates to RealPresence® Collaboration Server or RMX conference profiles (see Conference Templates on page 190).

Both methods allow you to specify most conference parameters:

- General information such as line rate, encryption, auto termination, and H.239 settings
- Video settings such as mode (presentation or lecture) and layout
- IVR settings
- Conference recording settings

If you want to create RealPresence DMA system templates linked to conference profiles on the RealPresence Collaboration Server or RMX MCUs, make sure the profiles used by the Polycom RealPresence DMA system exist on all the MCUs and are defined the same on all of them.

Connect to Microsoft Active Directory®

Connecting to Microsoft® Active Directory® simplifies the task of deploying conferencing to a large organization. All Polycom RealPresence DMA system access to the Active Directory server is read-only and minimally impacts the directory performance. See Microsoft Active Directory® Integration on page 152.

Note: Consult an Expert

If you're not knowledgeable about enterprise directories in general and your specific implementation in particular, please consult with someone who is. Active Directory integration is a non-trivial matter.

Before integrating with Active Directory, be sure that one or more DNS servers are specified (this should have been done during installation and initial setup). See Network Settings on page 63.

If you're deploying a supercluster of multiple geographically distributed Polycom RealPresence DMA clusters, verify that you've assigned clusters to the territories in your site topology (see Configure the Call Server and Optionally Create a Supercluster on page 34) and decide which cluster is to be responsible for Active Directory integration.

Active Directory integration automatically makes the enterprise users (directory members) into Conferencing Users in the Polycom RealPresence DMA system, and can assign each of them a conference room (virtual meeting room, or VMR). The conference room IDs are typically generated from the enterprise users' phone numbers.

Note: Manually Add Conference Rooms

Creating conference rooms for enterprise users is optional. If you want to integrate with Active Directory to load user and group information into the Polycom RealPresence DMA system, but don't want to give all users the ability to host conferences, you can do so. You can manually add conference rooms for selected users at any time. See Conference Rooms Procedures on page 323.

Once the Polycom RealPresence DMA system is integrated with Active Directory, it reads the directory information nightly, so that user and group information is updated automatically as people join and leave the organization. The system caches certain data from Active Directory. In a superclustered system, one cluster is responsible for updating the cache, which is shared with all the clusters.

Between updates, clusters access the directory only to authenticate passwords (for instance, for management interface login); all other user information (such as user search results) comes from the cache. You can manually update the cache at any time.

Enterprise groups can have their own conference templates that provide a custom conferencing experience (see Conference Templates on page 190). They can also have their own MCU pool order, which preferentially routes conferences to certain MCUs (see MCU Pool Orders on page 145).

You can assign Polycom RealPresence DMA system roles to an enterprise group, applying the roles to all members of the group and enabling them to log into the Polycom RealPresence DMA system's management interface with their standard network user names and passwords.

See User Roles Overview on page 301, Groups on page 325, and Enterprise Groups Procedures on page 329.

There are security concerns that need to be addressed regarding user accounts, whether local or enterprise. See the high-level process described in Set Up Security on page 34.

Set Up Conference Templates

The Polycom RealPresence DMA system uses conference templates and global conference settings to manage system and conference behavior, and it has a default conference template and default global conference settings.

After you've added MCUs to the system, you may want to change the global conference settings or create additional templates that specify different conference properties.

If you integrate with Active Directory, you can use templates to provide customized conferencing experiences for various enterprise groups.

When you add a custom conference room to a user (either local or enterprise), you can choose which template that conference room uses.

To add conference templates, see Conference Templates Procedures on page 216. To change conference settings, see Conference Settings on page 185. To customize the conferencing experience for an enterprise group, see Enterprise Groups Procedures on page 329.

Test the System

On the **Signaling Settings** page (see Signaling Settings on page 72), verify that:

- If you enabled H.323, the **H.323 Signaling Status** section indicates that the signaling status is **Active** and the port assignments are correct.
- If you enabled SIP, the **SIP Signaling Status** section shows that the correct protocols and listening ports are enabled.

Have some endpoints register with the Polycom RealPresence DMA Call Server and make point-to-point calls to each other.

On the **Dashboard** (see Dashboard on page 336), verify that:

- The information in the **Cluster Info** pane looks correct, including the time, network settings, and system resource information.
- The **Supercluster Status** pane shows the correct number of servers and clusters, and the network interfaces that should be working (depending on your IP type and split network settings) are up (green up arrow) and in full duplex mode, with the speed correct for your enterprise network.
- The **Call Server Registrations** pane shows that the endpoints that attempted to register did so successfully.
- **The Call Server Active Calls** pane shows that the endpoints that made calls did so successfully, and the call limits per cluster and total are correct for your licenses.
- The **Conference Manager MCUs** pane shows that the MCUs you added are connected and in service.
- The information on the **Active Directory Integration** pane looks correct, including the status, cache refresh data, and enterprise conference room count.

Set up some multipoint conferences by having endpoints dial into enterprise users' conference rooms (preferably including a custom conference room). Verify that conferencing works satisfactorily, that the system status is good, and that the **Conference Manager Usage** pane accurately presents the status.

When you're satisfied that the Polycom RealPresence DMA system is configured and working properly, manually create a backup, download it, and store it in a safe place. See Backing Up and Restoring on page 374.

System Security

This chapter describes the following Polycom® RealPresence® Distributed Media Application™ (DMA®) 7000 system security topics:

Security Certificates Overview

How Certificates Work

X.509 certificates are a security technology that assists networked computers in determining whether to trust each other.

- A single, centralized certificate authority (CA) is established. Typically, this is either an enterprise's IT department or a commercial certificate authority.
- Each computer on the network is configured to trust the central certificate authority.
- Each server on the network has a public certificate that identifies it.
- The certificate authority signs the public certificates of those servers that clients should trust.
- When a client connects to a server, the server shows its signed public certificate to the client. Trust is established because the certificate has been signed by the certificate authority, and the client has been configured to trust the certificate authority.

Forms of Certificates Accepted by the Polycom RealPresence DMA System

X.509 certificates come in several forms (encoding and protocol). The following table shows the forms that can be installed in the Polycom RealPresence DMA system.

Encoding	Protocol / File Type	Description and Installation Method
PEM (Base64-encoded ASCII text)	PKCS #7 protocol P7B file	Certificate chain containing: • A signed certificate for the system, authenticating its public key. • The CA's public certificate. • Sometimes intermediate certificates. Upload file or paste into text box.
	CER (single certificate) file	Signed certificate for the system, authenticating its public key. Upload file or paste into text box.
	Certificate text	Encoded certificate text copied from CA's email or secure web page. Paste into text box.
DER (binary format using ASN.1 Distinguished Encoding Rules)	PKCS #12 protocol PFX file	Certificate chain containing: • A signed certificate for the system, authenticating its public key. • A private key for the system. • The CA's public certificate. Upload file.
	PKCS #7 protocol P7B file	Certificate chain containing: • A signed certificate for the system, authenticating its public key. • The CA's public certificate. • Sometimes intermediate certificates. Upload file.
	CER (single certificate) file	Signed certificate for the system, authenticating its public key. Upload file.

How Certificates Are Used by the Polycom RealPresence DMA System

The Polycom RealPresence DMA system uses X.509 certificates in the following ways:

1. When a user logs into the Polycom RealPresence DMA system's browser-based management interface, the Polycom RealPresence DMA system (server) offers an X.509 certificate to identify itself to the browser (client).

   The Polycom RealPresence DMA system's certificate must have been signed by a certificate authority (see Certificate Procedures on page 46).

   The browser must be configured to trust that certificate authority (beyond the scope of this documentation).

   If trust can't be established, most browsers allow connection anyway, but display a 'nag' dialog to the user, requesting permission.

2 When the Polycom RealPresence DMA system connects to a Microsoft Active Directory server, it may present a certificate to the server to identify itself.

   If Active Directory is configured to require a client certificate (this is not the default), the Polycom RealPresence DMA system offers the same SSL server certificate that it offers to browsers connecting to the system management interface. Active Directory must be configured to trust the certificate authority, or it rejects the certificate and the connection fails.

3 When the Polycom RealPresence DMA system connects to a Microsoft Exchange server (if the calendaring service is enabled; see Microsoft Exchange Server Integration on page 175), it may present a certificate to the server to identify itself.

   Unless the **Allow unencrypted calendar notifications from Exchange server** security option is enabled (see Security Settings on page 50), the Polycom RealPresence DMA system offers the same SSL server certificate that it offers to browsers connecting to the system management interface. The Microsoft Exchange server must be configured to trust the certificate authority. Otherwise, the Microsoft Exchange Server integration status (see Dashboard on page 336) remains **Subscription pending** indefinitely, the Polycom RealPresence DMA system does not receive calendar notifications, and incoming meeting request messages are only processed approximately every 4 minutes.

4 When the Polycom RealPresence DMA system connects to a RealPresence Collaboration Server or RMX MCU configured for secure communications (this is not the default), a certificate may be used to identify the MCU (server) to the Polycom RealPresence DMA system (client).

5 When performing call signaling requiring TLS, the Polycom RealPresence DMA system presents its certificate to the connecting client (one-way TLS). Unless the **Skip certificate validation for encrypted signaling** security option is enabled (see Security Settings on page 50), the system uses the installed CA certificates to authenticate the connecting client's certificate as well (mTLS or two-way TLS).

Frequently Asked Questions

Q. Is it secure to send my certificate request through email?

A. Yes. The certificate request, signed certificate, intermediate certificates, and authority certificates that are sent through email don't contain any secret information. There is no security risk in letting untrusted third parties see their contents.

As a precaution, you can verify the certificate fingerprints (which can be found in the Certificate Details popup) with the certificate authority via telephone. This ensures that a malicious third party didn't substitute a fake email message with fake certificates.

Q. Why doesn't the information on the Certificate Details popup match the information that I filled out in the signing request form?

A. Commercial certificate authorities routinely replace the organizational information in the certificate with their own slightly different description of your organization.

Q. I re-installed the Polycom RealPresence DMA system software. Why can't I re-install my signed public certificate?

A. X.509 certificates use public/private key pair technology. The public key is contained in your public certificate and is provided to any web browser that asks for it. The private key never leaves the Polycom RealPresence DMA system.

As part of software installation, the Polycom RealPresence DMA system generates a new public/private key pair. The public key from your old key pair can't be used with the new private key.

To re-use your signed public certificate, try restoring from backup. Both the public and private keys are saved as part of a backup file. Alternatively, if the certificate you want to reinstall is a PKCS#12 certificate, it contains a private key and will replace both the public key and the private key generated at installation time.

See also:

System Security on page 39

Certificate Settings on page 43

Certificate Procedures on page 46

Certificate Settings

The following table describes the fields on the **Certificate Settings** page.

Column	Description
Enable OCSP	Enables the use of Online Certificate Status Protocol as a means of obtaining the revocation status of a certificate presented to the system. If **OCSP responder URL** is not specified, the system checks the certificate's AuthorityInfoAccess (AIA) extension fields for the location of an OCSP responder: • If there is none, the certificate fails validation. • Otherwise, the system sends the OCSP request to the responder identified in the certificate. If **OCSP responder URL** is specified, the system sends the OCSP request to that responder. The responder returns a message indicating whether the certificate is good, revoked, or unknown. If **OCSP certificate** is specified, the response message must be signed by the specified certificate's private key.
OCSP responder URL	Identifies the responder to be used for all OCSP requests, overriding the AIA field values. If **OCSP certificate** is specified, the response message must be signed by the specified certificate's private key.
OCSP certificate	Select a certificate to require OCSP response messages to be signed by the specified certificate's private key.
Store OCSP Configuration	Saves the OCSP configuration.
Identifier	Common name of the certificate.
Purpose	Kind of certificate: • Server SSL is the RealPresence DMA system's public certificate, which it presents to identify itself. By default, this is a self-signed certificate, not trusted by other devices. • Trusted Root CA is the root certificate of a certificate authority that the RealPresence DMA system trusts. • Intermediate CA is a CA certificate that trusted root CAs issue themselves to sign certificate signing requests (reducing the likelihood of their root certificate being compromised). If the RealPresence DMA system trusts the root CA, then the chain consisting of it, its intermediate CA certificates, and the server certificate will all be trusted.
Expiration	Expiration date of certificate.

See also:

Security Certificates Overview on page 39
Certificate Signing Request Dialog Box on page 44
Add Certificates Dialog Box on page 45
Certificate Details Dialog Box on page 45
Certificate Procedures on page 46

Certificate Information Dialog Box

The **Certificate Information** dialog box appears when you click **Create Certificate Signing Request** in the **Actions** list (if a signing request has already been issued, you're first asked whether to use the existing one or create a new one). The following table describes the fields in the dialog box.

Field	Description
Common name (CN)	Defaults to the FQDN of the system's management interface, as defined by the virtual host name and domain specified on the **Network** page. Editable.
Signature algorithm	The cryptographic hash algorithm used to sign the CSR. Use SHA256 for maximum security. Use SHA1 when necessary for interoperability.
Organizational unit (OU)	Subdivision of organization. Specify up to three OUs. Optional.
Organization (O)	Optional.
City or locality (L)	Optional.
State (ST)	Optional.
Country (C)	Two-character country code.

See also:

Security Certificates Overview on page 39
Certificate Settings on page 43
Certificate Procedures on page 46

Certificate Signing Request Dialog Box

The **Certificate Signing Request** dialog box appears when you create a request in the **Certificate Information** dialog box.

The **Summary** section at the top displays the information the **Certificate Information** dialog box.

The **Encoded Request** box below displays the encoded certificate request text, which you can select and copy.

See also:

Security Certificates Overview on page 39
Certificate Settings on page 43
Certificate Procedures on page 46

Add Certificates Dialog Box

The **Add Certificates** dialog box appears when you click **Add Certificates** in the **Actions** list. It lets you install signed certificates or certificate chains. You can do so in two ways:

- Upload a PFX, PEM, or P7B certificate file.
- Paste PEM-format certificate text into the dialog box.

The following table describes the fields in the dialog box.

Field	Description
Upload certificate	If checked, the **Password** field and **Upload file** button enable you to upload a PFX, PEM, or P7B certificate file.
Password	Enter the password, if any, assigned to the certificate file when it was created.
Upload file	Click the button to browse to the file you want to upload.
Paste certificate	If checked, the text field below enables you to paste in the text of PEM certificate files.

See also:

Security Certificates Overview on page 39

Certificate Settings on page 43

Certificate Procedures on page 46

Certificate Details Dialog Box

The **Certificate Details** dialog box appears when you click **Display Details** in the **Actions** list. It displays information about the certificate selected in the list, as outlined in the following table.

Section	Description
Certificate Info	Purpose and alias of the certificate.
Issued To	Information about the entity to which the certificate was issued and the certificate serial number.
Issued By	Information about the issuer.
Validity	Issue and expiration dates.
Fingerprints	SHA1 and MD5 fingerprints (checksums) for confirming certificate.
Subject Alternative Names	Additional identities bound to the subject of the certificate. For the Polycom RealPresence DMA system, this should include the virtual and physical FQDNs, short host names, and IP addresses of the system.
Extended Key Usage	Indicates the purposes for which the certificate can be used. The Polycom RealPresence DMA system's certificate is used for both server and client connections, so this should always contain at least serverAuth and clientAuth.

See also:

Security Certificates Overview on page 39

Certificate Settings on page 43

Certificate Procedures

Certificate procedures include the following:

- Install your chosen certificate authority's public certificate, if necessary, so that the Polycom RealPresence DMA system trusts that certificate authority.
- Create a certificate signing request to submit to the certificate authority.
- Install a public certificate signed by your certificate authority that identifies the Polycom RealPresence DMA system.
- Remove a signed certificate or a certificate authority's certificate.

Note: Obtaining Certificates for Microsoft Environments

If you're configuring the Polycom RealPresence DMA system to support Polycom's solution for the Microsoft OCS or Lync environment, you can use Microsoft's Certificate Wizard to request and obtain a PFX file (a password-protected PKCS12 file containing a private key and public key for the system, and the CA's certificate).

Once you have the PFX file, you're ready to install it.

See Polycom's solution deployment guide for information about using the Certificate Wizard and other steps needed to implement the solution.

Install a Certificate Authority's Certificate

This procedure is not necessary if you obtain a certificate chain that includes a signed certificate for the Polycom RealPresence DMA system, your certificate authority's public certificate, and any intermediate certificates.

Use this procedure to add a trusted certificate authority, either an in-house or commercial CA.

Caution: Installing or Removing Certificates Requires a Restart

Installing or removing certificates requires a system restart and terminates all active conferences.

When you install or remove a certificate, the change is made to the certificate store immediately, but the system can't implement the change until it restarts and reads the changed certificate store.

For your convenience, you're not required to restart and apply a change immediately. This permits you to perform multiple installs or removals before restarting and applying the changes. But when you're finished making changes, you must select **Restart to Apply Saved Changes** to restart the system and finish your update. Before you begin, make sure there are no active conferences and you're prepared to restart the system when you're finished.

To install a certificate for a trusted root CA

1 Go to **Admin > Local Cluster > Certificates**.

The installed certificates are listed. The *Trusted Root CA* entries, if any, represent the certificate authorities whose public certificates are already installed on the RealPresence DMA system and are thus trusted.

2 If you're using a certificate authority that isn't listed, obtain a copy of your certificate authority's public certificate.

   The certificate must be either a single X.509 certificate or a PKCS#7 certificate chain. If it's ASCII text, it's in PEM format, and starts with the text `-----BEGIN CERTIFICATE-----`. If it's a file, it can be either PEM or DER encoded.

3 In the **Actions** list, select **Add Certificates**.

4 In the **Add Certificates** dialog box, do one of the following:

   - If you have a file, click **Upload certificate**, enter the password (if any) for the file, and browse to the file or enter the path and file name.
   - If you have PEM-format text, copy the certificate text, click **Paste certificate**, and paste it into the text box below.

5 Click **OK**.

6 Verify that the certificate appears in the list as a *Trusted Root CA*.

7 Click **Restart to Apply Saved Changes**, and when asked to confirm that you want to restart the system so that certificate changes can take effect, click **OK**.

See also:

Security Certificates Overview on page 39

Certificate Settings on page 43

Certificate Procedures on page 46

Create a Certificate Signing Request in the RealPresence DMA System

The procedure below creates a certificate signing request (CSR) that you can submit to your chosen certificate authority. This method uses the private key generated at software installation time.

To create a certificate signing request

1 Go to **Admin > Local Cluster > Certificates**.

   By default, the system is configured to use a self-signed certificate.

2 To see details of the public certificate currently being used to identify the system to other computers:

   a In the list, select the *Server SSL* certificate.

   b In the **Actions** list, select **Display Details**.

   The Certificate Details dialog box appears. If this is the default self-signed certificate, **Organizational Unit** is *Self Signed Certificate*.

   c To close the dialog box, click **OK**.

3 In the **Actions** list, select **Create Certificate Signing Request**.

   If you've created a signing request before, you're asked if you want to use your existing certificate request or generate a new one. Elect to generate a new one.

4 In the **Certificate Information** dialog box, enter the identifying information for your Polycom RealPresence DMA system (see Certificate Information Dialog Box on page 44) and click **OK**.

   The **Certificate Signing Request** dialog box displays the encoded request (see Certificate Signing Request Dialog Box on page 44).

5 Copy the entire contents of the **Encoded Request** box (including the text `-----BEGIN NEW CERTIFICATE REQUEST-----` and `-----END NEW CERTIFICATE REQUEST-----`) and submit it to your certificate authority.

   Depending on the certificate authority, your CSR may be submitted via email or by pasting into a web page.

6 Click **OK** to close the dialog box.

   When your certificate authority has processed your request, it sends you a signed public certificate for your Polycom RealPresence DMA system. Some certificate authorities also send intermediate certificates and/or root certificates. Depending on the certificate authority, these certificates may arrive as email text, email attachments, or be available on a secure web page.

   The Polycom RealPresence DMA system accepts PKCS#7 or PKCS#12 certificate chains or single certificates.

Caution: Some CSR Fields Should Not Be Modified

When you submit the CSR to your CA, make sure that the CA doesn't modify any of the predefined SAN fields or the X.509v3 Key Usage or Extended Key Usage fields. Changes to these fields may make your system unusable. Contact Polycom technical support if you have any questions about this.

See also:

Security Certificates Overview on page 39

Certificate Settings on page 43

Certificate Procedures on page 46

Install a Certificate in the RealPresence DMA System

The procedure below installs the certificate or certificate chain provided by the certificate authority. It assumes that you've received the certificate or certificate chain in one of the following forms:

- A PFX, P7B, or single certificate file that you've saved on your computer.
- PEM-format encoded text that you received in an email or on a secure web page.

Caution: Installing or Removing Certificates Requires a Restart

Installing or removing certificates requires a system restart and terminates all active conferences.

When you install or remove a certificate, the change is made to the certificate store immediately, but the system can't implement the change until it restarts and reads the changed certificate store.

For your convenience, you're not required to restart and apply a change immediately. This permits you to perform multiple installs or removals before restarting and applying the changes. But when you're finished making changes, you must select **Restart to Apply Saved Changes** to restart the system and finish your update. Before you begin, make sure there are no active conferences and you're prepared to restart the system when you're finished.

To install a signed certificate that identifies the Polycom RealPresence DMA system

1 When you receive your certificate(s), return to **Admin > Local Cluster > Certificates**.

2 In the **Actions** list, select **Add Certificates**.

3 In the **Add Certificates** dialog box, do one of the following:

- If you have a PFX, P7B, or single certificate file, click **Upload certificate**, enter the password (if any) for the file, and browse to the file or enter the path and file name.
- If you have PEM-format text, copy the certificate text, click **Paste certificate**, and paste it into the text box below. You can paste multiple PEM certificates one after the other.

4 Click **OK**.

5 To verify that the new signed certificate has replaced the default self-signed certificate:

a In the list of certificates, once again select the *Server SSL* certificate.

b In the **Actions** list, select **Display Details**.

The **Certificate Details** dialog box appears.

c Confirm from the information under **Issued To** and **Issued By** that the self-signed default certificate has been replaced by your signed public certificate from the certificate authority.

d Click **OK** to close the dialog box.

6 Click **Restart to Apply Saved Changes**, and when asked to confirm that you want to restart the system so that certificate changes can take effect, click **OK**.

See also:

Security Certificates Overview on page 39

Certificate Settings on page 43

Certificate Procedures on page 46

Remove a Certificate from the RealPresence DMA System

There are two kinds of certificate removal:

- Removing the certificate of a Trusted Root CA so that the system no longer trusts certificates signed by that certificate authority.
- Removing the signed certificate currently in use as the Server SSL certificate so that the system reverts to using the default self-signed Server SSL certificate.

  Removing a signed certificate also removes the certificate of the Trusted Root CA that signed it, along with any intermediate certificates provided by that certificate authority.

Both procedures are described below.

Caution: Installing or Removing Certificates Requires a Restart

Installing or removing certificates requires a system restart and terminates all active conferences.

When you install or remove a certificate, the change is made to the certificate store immediately, but the system can't implement the change until it restarts and reads the changed certificate store.

For your convenience, you're not required to restart and apply a change immediately. This permits you to perform multiple installs or removals before restarting and applying the changes. But when you're finished making changes, you must select **Restart to Apply Saved Changes** to restart the system and finish your update. Before you begin, make sure there are no active conferences and you're prepared to restart the system when you're finished.

To remove a Trusted Root CA's certificate

1 Go to **Admin > Local Cluster > Certificates**.

2 In the certificates list, select the certificate you want to delete.

3 In the **Actions** list, select **Display Details** and confirm that you've selected the correct certificate. Then click **OK**.

4 In the **Actions** list, select **Delete Certificate**.

5 When asked to confirm, click **Yes**.

A dialog box informs you that the certificate has been deleted.

6 Click **OK**.

7 Click **Restart to Apply Saved Changes**, and when asked to confirm that you want to restart the system so that certificate changes can take effect, click **OK**.

To remove a signed certificate and revert to the default self-signed certificate

1 Go to **Certificates**.

2 In the **Actions** list, select **Revert to Default Certificate**.

3 When asked to confirm, click **Yes**.

A dialog box informs you that the system has reverted to a self-signed certificate.

4 Click **OK**.

5 Click **Restart to Apply Saved Changes**, and when asked to confirm that you want to restart the system so that certificate changes can take effect, click **OK**.

6 After the system restarts, log back in, return to **Admin > Local Cluster > Certificates**, and verify that the system has reverted to the default self-signed certificate:

a In the list of certificates, select the *Server SSL* certificate.

b In the **Actions** list, select **Display Details**.

The **Certificate Details** dialog box appears.

c Confirm from the information under **Issued To** and **Issued By** that the default self-signed certificate has replaced the CA-signed certificate.

d Click **OK** to close the dialog box.

See also:

Security Certificates Overview on page 39

Certificate Settings on page 43

Certificate Procedures on page 46

Security Settings

The **Security Settings** page lets you switch between high security mode and a custom security mode in which one or more insecure capabilities are allowed. It also lets you switch to, but not from, a maximum security mode.

Caution: High Security Setting Recommended

We recommend always using the **High security** setting unless you have a specific and compelling need to allow one of the insecure capabilities.

We recommend the **Maximum security** setting only for those environments where the most stringent security protocols must be adhered to.

Enabling **Maximum security** is ***irreversible*** and has significant consequences (see The Consequences of Enabling Maximum Security Mode on page 55). Don't choose this setting unless you know what you're doing and are prepared for the consequences. Refer to the *Polycom RealPresence DMA 7000 System Deployment Guide for Maximum Security Environments* for additional important information about enabling this setting.

Note: Security Settings Must Match Across Superclusters

All clusters in a supercluster must have the same security settings. Before attempting to join a supercluster, make sure the cluster's security settings match those of the other members of the supercluster. You can't change a cluster's security settings while it's part of a supercluster.

Note: Maximum Security Mode Unsupported in Virtual Edition

The RealPresence DMA system, Virtual Edition, does not support Maximum Security Mode.

The following table describes the options in the **Security Settings** page.

Field	Description
Maximum security	An extremely high security mode suitable for use where very strict security requirements apply. Once this mode is enabled, it's no longer possible to reduce the security level. See caution above.
High security	Recommended setting for normal operation.
Custom security	Lets you enable one or more of the unsecured methods of network access listed below it.
Allow Linux console access	Enables the Linux user root to log into the system using SSH. This direct Linux access isn't needed for normal operation, routine maintenance, or even troubleshooting, all of which can be done through the administrative GUI. In extreme circumstances, this option might enable expert Polycom Global Services personnel to more fully understand the state of a troubled system or correct problems. Enable this option only when asked to do so by Polycom Global Services.

Field	Description
Allow unencrypted connections to the Active Directory	Normally, the Polycom RealPresence DMA system connects to Active Directory using SSL or TLS encryption. But if the Active Directory server or servers (including domain controllers if you import global groups) aren't configured to support encryption, the Polycom RealPresence DMA system can only connect using an unencrypted protocol. This option allows such connections if an encrypted connection can't be established. This configuration causes an extreme security flaw: the unencrypted passwords of enterprise users are transmitted over the network, where they can easily be intercepted. Use this option only for diagnostic purposes. By toggling it, you can determine whether encryption is the cause of a failure to connect to Active Directory or to load group data. If so, the solution is to correctly configure the relevant servers, not to allow ongoing use of unencrypted connections.
Allow unencrypted connections to MCUs	Normally, the Polycom RealPresence DMA system uses only HTTPS for the conference control connection to RealPresence Collaboration Server or RMX MCUs, and therefore can't control an MCU that accepts only HTTP (the default). This option enables the system to fall back to HTTP for MCUs not configured for HTTPS. We recommend configuring your MCUs to accept encrypted connections rather than enabling this option. When unencrypted connections are used, the RealPresence Collaboration Server or RMX login name and password are sent unencrypted over the network.
Allow unencrypted calendar notifications from Exchange server	Normally, if calendaring is enabled, the Polycom RealPresence DMA system gives the Microsoft Exchange server an HTTPS URL to which the Exchange server can deliver calendar notifications. In that case, the Polycom RealPresence DMA system must have a certificate that the Exchange server accepts in order for the HTTPS connection to work. If this option is selected, the Polycom RealPresence DMA system does not require HTTPS for calendar notifications. We recommend installing a certificate trusted by the Exchange server and using an HTTPS URL for notifications rather than enabling this option.
Allow basic authentication to Exchange server	Normally, if calendaring is enabled, the Polycom RealPresence DMA system authenticates itself with the Exchange server using NTLM authentication. If this option is selected, the Polycom RealPresence DMA system still attempts to use NTLM first. But if that fails or isn't enabled on the Exchange server, then the RealPresence DMA system falls back to HTTP Basic authentication (user name and password). We recommend using NTLM authentication rather than enabling this option. In order for either NTLM or HTTP Basic authentication to work, they must be enabled on the Exchange server.

Field	Description
Skip certificate validation for server connecting	Normally, when the Polycom RealPresence DMA system connects to a server, it validates that server's certificate. This option configures the system to accept any certificate presented to it without validating it. We recommend using valid certificates for all servers that the system may need to contact rather than enabling this option. Depending on system configuration, this may include: MCUs Active Directory Exchange RealPresence Resource Manager or CMA system Other RealPresence DMA systems Endpoints **Note:** Either the Common Name (CN) or Subject Alternate Name (SAN) field of the server's certificate must contain the address or host name specified for the server in the Polycom RealPresence DMA system. Polycom MCUs don't include their management IP address in the SAN field of the CSR (Certificate Signing Request), so their certificates identify them only by the CN. Therefore, in the Polycom RealPresence DMA system, a Polycom MCU's management interface must be identified by the name specified in the CN field (usually the FQDN), not by IP address. Similarly, an Active Directory server certificate often specifies only the FQDN. So in the Polycom RealPresence DMA system, identify the enterprise directory by FQDN, not by IP address.
Allow certificate validation skipping for encrypted signaling	Normally, during encrypted call signaling (SIP over TLS), the Polycom RealPresence DMA system requires the remote party (endpoint or MCU) to present a valid certificate. This is known as mTLS or two-way TLS. This option configures the system to accept any certificate (or none). We recommend installing valid certificates on your endpoints and MCUs rather than enabling this option.
Allow non conference participants to receive conference events	The SIP SUBSCRIBE/NOTIFY conference notification service (as described in RFCs 3265 and 4575), allows SIP devices to subscribe to a conference and receive conference rosters and notifications of conference events. Normally, the subscribing endpoints are conference participants. This option configures the system to let devices subscribe to a conference without being participants in the conference. **Note:** A subscription to a conference by a non-participant consumes a call license. Call history doesn't include data for non-participant subscriptions.

Field	Description
The following settings may be configured in any security mode.	
Skip certificate validation for user login sessions	This option may be configured in any security mode. If this option is turned off, you can only connect to the Polycom RealPresence DMA system if your browser presents a client certificate issued by a CA that the system trusts (this is known as mTLS for administrative connections). Turn this option off only if: • You've implemented a complete public key infrastructure (PKI) system, including a CA server, client software (and optionally hardware, tokens, or smartcards), and the appropriate operational procedures. • The CA's public certificate is installed in the Polycom RealPresence DMA system so that it trusts the CA. • All authorized users, including yourself, have a client certificate signed by the CA that authenticates them to the Polycom RealPresence DMA system.
Allow forwarding of IPv6 ICMP destination unreachable messages	This option may be configured in any security mode. If this option is off, the Polycom RealPresence DMA system has an internal firewall rule that blocks outbound destination unreachable messages. If this option is on, that firewall rule is disabled. **Note:** The Polycom RealPresence DMA system currently doesn't send such messages, regardless of this setting.
Allow IPv6 ICMP echo reply messages to multicast addresses	This option may be configured in any security mode. If this option is off, the Polycom RealPresence DMA system doesn't reply to echo request messages sent to multicast addresses (multicast pings). If this option is on, the system responds to multicast pings.

To change the security settings

1 Go to **Admin > Local Cluster > Security Settings**.

2 To switch from a custom setting back to the recommended security mode, click **High security**.

3 To switch from the recommended security mode to a custom setting:

   a Click **Custom security**.

   b Check the unsecured network access method(s) that you want to enable.

4 Click **Update**.

   A dialog box informs you that the configuration has been updated.

Note: Skip Certificate Validation for User Login Sessions is Automatically Re-Enabled

If you turn off **Skip certificate validation for user login sessions**, the system notifies you that if you don't log back in within 5 minutes, the setting will be automatically turned back on. This is a safety precaution to ensure that at least one user is still able to access the system.

5 Click **OK**.

See also:

System Security on page 39
Certificate Settings on page 43
Login Policy Settings on page 57
Reset System Passwords on page 61

The Consequences of Enabling Maximum Security Mode

Enabling the **Maximum security** setting is irreversible and has the following significant consequences:

- All unencrypted protocols and unsecured access methods are disabled, and the enhanced support feature is disabled.
- The boot order is changed so that the server(s) can't be booted from the optical drive or a USB device.
- A BIOS password is set.
- The port 443 redirect is removed, and the system can only be accessed by the full URL (https://<IP>:8443/dma7000, where <IP> is one of the system's management IP addresses or a host name that resolves to one of those IP addresses).
- For all server-to-server connections, the system requires the remote party to present a valid X.509 certificate. Either the Common Name (CN) or Subject Alternate Name (SAN) field of that certificate must contain the address or host name specified for the server in the Polycom RealPresence DMA system.

  Polycom RMX MCUs don't include their management IP address in the SAN field of the CSR (Certificate Signing Request), so their certificates identify them only by the CN. Therefore, in the Polycom RealPresence DMA system, an RMX MCU's management interface must be identified by the host name or FQDN specified in the CN field, not by IP address.

  Similarly, an Active Directory server certificate often specifies only the FQDN. Therefore, in the Polycom RealPresence DMA system, the Active Directory must be identified by FQDN, not by IP address.
- Superclustering is not supported.
- The Polycom RealPresence DMA system can't be integrated with Microsoft Exchange Server and doesn't support virtual meeting rooms (VMRs) created by the Polycom Conferencing Add-in for Microsoft Outlook.
- Integration with a Polycom RealPresence Resource Manager or CMA system is not supported.
- On the **Banner** page, **Enable login banner** is selected and can't be disabled.
- On the **Login Sessions** page, the **Terminate Session** action is not available.
- On the **Troubleshooting Utilities** menu, **Top** is removed.
- In the **Add User** and **Edit User** dialog boxes, conference and chairperson passcodes are obscured.
- After **Maximum security** is enabled, management interface users must change their passwords.
- If the system is not integrated with Active Directory, each local user can have only one assigned role (Administrator, Provisioner, or Auditor).

  If some local users have multiple roles when you enable **Maximum security**, they retain only the highest-ranking role (Administrator > Auditor > Provisioner).

- If the system is integrated with Microsoft Active Directory, only one local user can have the Administrator role, and no local users can have the Provisioner or Auditor role.

  If there are multiple local administrators when you enable **Maximum security**, the system prompts you to choose one local user to retain the Administrator role. All other local users, if any, become conferencing users only and can't log into the management interface.

  Each enterprise user can have only one assigned role (Administrator, Provisioner, or Auditor). If some enterprise users have multiple roles (or inherit multiple roles from their group memberships), they retain only the lowest-ranking role (Administrator > Auditor > Provisioner).
- Local user passwords have stricter limits and constraints (each is set to the noted default if below that level when you enable **Maximum security**):
  - Minimum length is 15-30 characters (default is 15).
  - Must contain 1 or 2 (default is 2) of each character type: uppercase alpha, lowercase alpha, numeric, and non-alphanumeric (special).
  - Maximum number of consecutive repeated characters is 1-4 (default is 2).
  - Number of previous passwords that a user may not re-use is 8-16 (default is 10).
  - Minimum number of characters that must be changed from the previous password is 1-4 (default is 4).
  - Password may not contain the user name or its reverse.
  - Maximum password age is 30-180 days (default is 60).
  - Minimum password age is 1-30 days (default is 1).
- Other configuration settings have stricter limits and constraints (each is set to the noted default if below that level when you enable **Maximum security**):
  - Session configuration limits:
    - Sessions per system is 4-80 (default is 40).
    - Sessions per user is 1-10 (default is 5).
    - Session timeout is 5-60 minutes (default is 10).
  - Local account configuration limits:
    - Local user account is locked after 2-10 failed logins (default is 3) due to invalid password within 1-24 hours (default is 1).
    - Locked account remains locked either until unlocked by an administrator (the default) or for a duration of 1-480 minutes.
- Non-conference participants can't be permitted to register for conference events.
- Software build information is not displayed anywhere in the interface.
- You can't restore a backup made before **Maximum security** was enabled.
- The RealPresence DMA system, Virtual Edition, does not support Maximum Security Mode.
- If you're using the Mozilla Firefox browser, you need to configure it to support TLS version 1.1 so that it can function correctly with a RealPresence DMA system configured for Maximum Security Mode.
- File uploads may fail when using the Mozilla Firefox browser unless the proper steps have been taken. See below.

Enabling File Uploads in Maximum Security with Mozilla Firefox

The Mozilla Firefox browser uses its own certificate database instead of the certificate database of the OS. If you use only that browser to access the Polycom RealPresence DMA system, the certificate(s) needed to securely connect to the system may be only in the Firefox certificate database and not in the Windows certificate store. This causes a problem for file uploads.

File upload via the Polycom RealPresence DMA system's Flash-based interface bypasses the browser and creates the TLS/SSL connection itself. Because of that, it uses the Windows certificate store, not the Firefox certificate database. If the certificate(s) establishing trust aren't there, the file upload silently fails.

To avoid this problem, you must import the needed certificates into Internet Explorer (and thus into the Windows certificate store). And, when accessing the system with Firefox, you must use its fully qualified host name.

First, start Internet Explorer and point it to the Polycom RealPresence DMA system. If you don't receive a security warning, the needed certificates are already in the Windows certificate store.

If you receive a warning, import the needed certificates. The details for doing so depend on the version of Internet Explorer and on your enterprise's implementation of certificates. In Internet Explorer 7, elect to continue to the site. Then click **Certificate Error** to the right of the address bar and click **View Certificates** to open the **Certificate** dialog box. From there, you can access the Certificate Import Wizard.

The entire trust chain must be imported (the system's signed certificate, intermediate certificates, if any, and the root CA's certificate). When importing a certificate, let Internet Explorer automatically select a certificate store.

See also:

System Security on page 39
Security Certificates Overview on page 39
Certificate Settings on page 43
Security Settings on page 50
Reset System Passwords on page 61

Login Policy Settings

The following pages, under **Admin > Login Policy Settings**, let you configure various aspects of user access to the system:

- Local Password
- Session
- Local User Account
- Banner
- Access Policy Settings

See also:

System Security on page 39
Certificate Settings on page 43
Security Settings on page 50
Reset System Passwords on page 61

Local Password

The **Local Password** page lets you increase system security by specifying age, length, and complexity requirements for the passwords of local administrator, auditor, and provisioner users. These rules don't apply to conferencing users' conference and chairperson passcodes, or to Active Directory users.

The following table describes the fields on the **Local Password** page.

Field	Description
Password Management	
Maximum password age (days)	Specify at what age a password expires (30-180 days).
Minimum password age (days)	Specify how frequently a password can be changed (1-30 days).
Minimum length	Specify the number of characters a password must contain (8-30).
Minimum changed characters	Specify the number of characters that must be different from the previous password (1-4).
Reject previous passwords	Specify how many of the user's previous passwords the system remembers and won't permit to be reused (8-30).
Password Complexity	
Allow user name or its reverse form	Turns off the protection against a password containing the user's login name or its reverse.
Lowercase letters	Specify the number of lowercase letters (a-z) that a password must contain.
Uppercase letters	Specify the number of uppercase letters (A-Z) that a password must contain.
Numbers	Specify the number of digit characters (0-9) that a password must contain.
Special characters	Specify the number of non-alphanumeric keyboard characters that a password must contain.
Maximum consecutive repeated characters	Specify how many sequential characters may be the same.

See also:

System Security on page 39

Login Policy Settings on page 57

Session

The **Session** page lets you increase system security by limiting the number and length of login sessions.

You can see the current login sessions and terminate sessions by going to **User > Login Sessions**. See Login Sessions on page 330.

The following table describes the fields on the **Session** page.

Field	Description
Active system sessions	Specify the number of simultaneous login sessions by all users or select **Unlimited**. Note: If this limit is reached, but none of the logged-in users is an Administrator, the first Administrator user to arrive is granted access, and the system terminates the non-Administrator session that's been idle the longest.
Active sessions per user	Specify the number of simultaneous login sessions per user ID or select **Unlimited**.
Session timeout (minutes)	Specify the length of time after which the system terminates a session for inactivity or select **Unlimited**.

See also:

System Security on page 39
Login Policy Settings on page 57

Local User Account

The **Local User Account** page lets you increase system security by:

- Locking out users who have exceeded the specified number and frequency of login failures. The system locks the account either indefinitely or for the length of time you specify.
- Disabling accounts that have been inactive a specified number of days.

The following table describes the fields on the **Local User Account** page.

Field	Description
Account Lockout	
Enable account lockout	Turns on lockout feature and enables lockout configuration fields below.
Failed login threshold	Specify how many consecutive login failures cause the system to lock an account.
Failed login window (hours)	Specify the time span within which the consecutive failures must occur in order to lock the account.
Customize user account lockout duration (minutes)	If selected, specify how long the user's account remains locked. If not selected, the lockout is indefinite, and a user with a locked account must contact an Administrator to unlock it.
Account Inactivity	
Customize account inactivity threshold (days)	Turns on disabling of inactive accounts and lets you specify the inactivity threshold that triggers disabling.

See also:

System Security on page 39
Login Policy Settings on page 57

Banner

A login banner is a message that appears when users attempt to access the system. They must acknowledge the message before they can log in.

The **Banner** page lets you enable the banner and select or create the message it displays. The message may contain up to 1500 characters. If the system is in **Maximum Security** mode, the login banner is enabled and can't be disabled.

The following table describes the fields on the **Banner** page.

Field	Description
Enable login banner	Enables the display of a login banner. If this box is unchecked, the **Message** field is disabled. The existing contents, if any, remain unchanged, but aren't displayed to users.
Message	Select one of the messages from the list, or select **Custom** and type or paste your own message into the field below. If you select one of the built-in samples, it's copied into the **Message** field, and you can then edit the copy. When you do so, the system resets the list to **Custom**. Your edits don't affect the stored sample. You can revert to the original version of the sample by re-selecting it from the list.

See also:

System Security on page 39

Login Policy Settings on page 57

Access Policy Settings

The **Access Policy Settings** page lets you increase system security by restricting access to the management and operations interface and APIs (port 8443) and to SNMP (by default, port 161) to a whitelist of authorized IP addresses or address ranges.

If enabled, the whitelist restrictions take effect as soon as the update operation is completed. If you enable the whitelist and click **Update** while logged in from an IP address that's not included in the whitelist, the system warns you that you won't be able to access the system and asks you to confirm the update.

The whitelist settings apply to all clusters in a supercluster. When you join a cluster to a supercluster, the cluster's settings are replaced by those from the supercluster.

The following table describes the fields on the **Access Policy Settings** page.

Field	Description
Accept management connections from these IP addresses and address ranges on ports 8443 (GUI/API) and 161 (SNMP)	Enables the input field below and restricts management access to the IP addresses or address ranges added to the list. If this box is unchecked, the list and input field are disabled. The existing contents of the list, if any, remain unchanged so that it can be re-enabled at any time without having to re-enter the addresses. **Note:** The label changes to reflect the currently configured SNMP port (see Configure SNMP on page 420). Port 161 is the default.
(list)	Lists the IP addresses and address ranges authorized for management access. Select an entry and click **Delete** to remove it from the list.
(input field)	Enter an IP address or address range and click **Add**. Enter a range as valid starting and ending IP addresses separated by a dash. For example: (IPv4) 10.33.33.0 - 10.33.34.255 (IPv6) ::1:fffe - ::2:1

See also:

System Security on page 39

Security Settings on page 50

The Consequences of Enabling Maximum Security Mode on page 55

Login Policy Settings on page 57

Reset System Passwords on page 61

Reset System Passwords

In an extremely high-security environment, security compliance policies may require that all passwords be changed at certain intervals, including operating system passwords.

The **Reset System Passwords** page is available only if the system is in maximum security mode. It lets you change these operating system passwords (such as the password for grub) to new, randomly-generated values. These are passwords for logins that aren't possible on a secure system. Resetting these operating system passwords has no effect on authorized users of the management interface (Administrators, Auditors, and Provisioners) or conferencing users.

To reset system passwords

1. Make sure there are no calls or conferences on the system.
2. Go to **Admin > Local Cluster > Reset System Passwords**.
3. Click **Reset Passwords**.

   The system warns you that active calls and conferences will be terminated and the system will restart, and asks you to confirm.
4. Click **Yes**.

   The system informs you that the passwords have been reset and that you're being logged out. Then it restarts. This takes several minutes.

5 Wait a few minutes to log back in.

See also:

System Security on page 39
Security Settings on page 50
The Consequences of Enabling Maximum Security Mode on page 55
Login Policy Settings on page 57
Access Policy Settings on page 60

Local Cluster Configuration

This chapter describes the following Polycom® RealPresence® Distributed Media Application™ (DMA®) 7000 system configuration topics:

- Network Settings
- Time Settings
- Licenses
- Signaling Settings
- Alerting Settings
- Logging Settings
- Local Cluster Configuration Procedures
- Automatically Send Usage Data

These are cluster-specific settings that are not part of the data store shared across superclustered systems. See Introduction to the Polycom RealPresence DMA System on page 15.

If you're performing the initial configuration of your Polycom RealPresence DMA system, study Polycom® RealPresence DMA® System Initial Configuration Summary on page 29 before you continue.

Network Settings

The following table describes the fields on the **Network Settings** page. In the Appliance Edition, most of these values are normally set in the USB Configuration Utility during system installation and rarely need to be changed. In the Virtual Edition, some of these settings are provisioned automatically when the system is deployed with RealPresence Platform Director. See the *Getting Started Guide* and the *Getting Started Guide for a Virtual Environment*.

Caution: Network Settings Changes Require a Restart

Changing some network settings (host names, IP addresses, or domains) requires a system restart and terminates all active conferences.

If the system is using a CA-provided identity certificate, changing some network settings (host names or IP addresses) also requires you to update the certificate. (If the system is using a self-signed certificate, an updated one is automatically created.)

You can't change these network settings while the system is part of a supercluster or integrated with a Polycom RealPresence Resource Manager or CMA system. You must first leave the supercluster or terminate the integration. If the cluster is responsible for any territories (as primary or backup), reassign those territories. After the change, rejoin the supercluster or Polycom RealPresence Resource Manager or CMA system. See Superclustering on page 226 or Resource Management System Integration on page 178.

Incorrect network information may make the system unusable and the management interface unreachable.

Caution: Configuring the RealPresence DMA System in a Secure Environment

The 802.1x LAN security settings can't be configured in the USB Configuration Utility. In a highly secure network that requires 802.1x authentication, the Polycom RealPresence DMA system won't be accessible until those settings are properly configured. To do so, follow the procedure for configuring the network settings using a laptop, as described in the *Deployment Guide for Maximum Security Environments*.

Note: Virtual Host Name Not Needed for Single-Server Systems

This version of the Polycom RealPresence DMA system eliminates the need for virtual host name(s) and IP addresses in a single-server system or cluster. When a version 5.0 or earlier single-server RealPresence DMA system is upgraded to version 5.1 or later, the previous version's virtual host name(s) and IP addresses become the upgraded version's physical host name(s) and IP addresses, so accessing the system doesn't change.

(Exception: If only IPv6 is enabled, the system must have two addresses, so a single-server system must still have a virtual host name and IP address.)

Field	Description
System IP type	IP addressing supported (IPv4, IPv6, or both).
System server configuration	Number of servers (1 or 2) in this cluster. **Caution:** Once this is set to **2 server configuration**, it can't be changed back to **1 server configuration**. To reconfigure a two-server system as two separate single-server systems, you must use the USB Configuration Utility. See the *Polycom RealPresence DMA 7000 System Getting Started Guide*.

Field	Description
System split network setting	Specifies whether to combine or split the system's management and signaling interfaces. If the same network will be used for both management (administrative access) and signaling, the signaling IP addresses and Shared Signaling Network Settings section below are not used. **Caution:** Choose split networking ***only*** if you need to restrict access to the management interface and SNMP to users on an isolated "non-public" network separate from the enterprise network. Typically, this is the case ***only*** in high-security environments. In most network environments, users accessing the management interface are on the same network as endpoints and other devices communicating with the RealPresence DMA system, and they use the same physical and virtual IP addresses and the same network interface. To split the network configuration, you must use different gateways and subnets for management and signaling, and separate physical connections for the management and signaling networks (eth0 for management, eth2 for signaling). In a split network configuration, routing rules are necessary for proper routing of network traffic. See Routing Configuration Dialog Box on page 68. If management and signaling traffic are combined on the same network (subnet), both use the same physical and virtual IP addresses and the same network interface. If you aren't sure whether split networking is appropriate, possible, or necessary for this installation, consult the appropriate IT staff or network administrator for your organization. In a split network configuration, routing rules are necessary for proper routing of network traffic.
Server 1	Status, host name, and IP address(es) of the primary server. The IP type and network setting determine which of the IP fields in this section are enabled. The management IP address is disabled if **IPv4 boot protocol** is set to DHCP. Host names may contain only letters, numbers, and internal dashes (hyphens), and may not include a domain. The reserved values appserv* and dmamgk-* may not be used for host names. The host name is combined with the domain name specified under **General System Network Settings** to form the fully qualified domain name (FQDN).
Server 2	Status, host name and IP address(es) of the secondary server. The fields in this section duplicate those in the Server 1 section and are enabled only in two-server configuration. The management IP address is disabled if **IPv4 boot protocol** is set to DHCP.

Field	Description
Shared Management Network Settings	The settings in this section apply to the entire system (both servers in two-server configuration), whether management and signaling are combined or separate.
Virtual host name	Virtual host name and IP address(es) for the system's management (or combined) network interface. For a one-server configuration, these fields are disabled. (Exception: If only IPv6 is enabled, the system must have two addresses, so a single-server system must still have a virtual host name and IP address.) Host names may contain only letters, numbers, and internal dashes (hyphens), and may not include a domain. The reserved values appserv* and dmamgk-* may not be used for host names. The host name is combined with the domain name specified under **General System Network Settings** to form the fully qualified domain name (FQDN). **Note:** Specify all IPv4 addresses in dotted-decimal form and all IPv6 addresses in colon-hex form.
IPv4	
IPv6	
Subnet mask	IPv4 network mask that defines the subnetwork of the system's management or combined interface.
IPv6 prefix length	IPv6 CIDR (Classless Inter-Domain Routing) prefix size value (the number of leading 1 bits in the routing prefix mask) that defines the subnetwork of the system's management or combined interface.
IPv4 gateway	IP address of the gateway server used to route network traffic outside the subnet.
Management Link	
Name	The name of the management network interface (eth0) is not editable, and it can't be disabled. The eth0 interface corresponds with the GB1 jack on the server.
Enable	
Auto-negotiation	Turn on **Auto-negotiation** or set **Speed** and **Duplex** manually. **Note:** Auto-negotiation is required if your network is 1000Base-T. Don't select 10000 unless you're certain your hardware platform supports it.
Speed	
Duplex	
Show Link Details	Click to see details about link settings and information. This information may be useful to Polycom Global Services when troubleshooting a network issue.
LAN Security Settings	**Caution:** In a network that requires 802.1x authentication for servers (this is rarely the case), incorrect settings in this section and, if applicable, lack of the proper certificate(s) can make the system unreachable. Recovering from this situation requires connecting a laptop to the system using a crossover cable in order to access it.
Enable 802.1x	Enables the system to authenticate this network interface to the LAN. Depending on the authentication method, the access credentials required may be either a user name and password (specified below) or a security certificate.
User name	The user name with which the system may authenticate this interface.

Field	Description
Password Confirm password	The password for the user name entered above.
EAP Method	The Extensible Authentication Protocol method used to establish trust with the authentication server (this is also known as the outer authentication protocol).
Protocol	When a TLS tunnel is established with the authentication server, the protocol used within the tunnel (this is also known as the inner authentication protocol).
Shared Signaling Network Settings	The settings in this section are enabled only if management and signaling traffic are on separate networks. If so, they apply to the entire system (both servers in two-server configuration). For a one-server configuration, the virtual host name and IP fields are disabled. (Exception: If only IPv6 is enabled, the system must have two addresses, so a single-server system must still have a virtual host name and IP address.) The settings are the same as those in **Shared Management Network Settings**, except that under Signaling Link, the signaling network interface (eth2) can be disabled. This capability exists for debugging purposes. The eth2 interface corresponds with the GB3 jack on the server. (The eth1 interface, which corresponds with the GB2 jack, is reserved for the private network connection between the two servers in a two-server cluster.)
General System Network Settings	The settings in this section apply to the entire system and aren't specific to management or signaling.
DNS search domains	One or more fully qualified domain names, separated by commas or spaces. The system domain you enter below is added automatically, so you need not enter it.
DNS 1	IP addresses of up to three domain name servers. At least one DNS server is required. Your Polycom RealPresence DMA system must be accessible by its host name(s), not just its IP address(es), so you (or your DNS administrator) must create A (address) resource records (RRs) for IPv4 and/or AAAA records for IPv6 on your DNS server(s). A/AAAA records that map each physical host name to the corresponding physical IP address and each virtual host name to the corresponding virtual IP address are mandatory.
DNS 2	
DNS 3	
Domain	The domain for the system. This is combined with the host name to form the fully qualified domain name (FQDN). For instance: Host name: `dma1` Domain: `callservers.example.com` FQDN: `dma1.callservers.example.com`
Signaling DSCP	The Differentiated Services Code Point value (0 - 63) to put in the DS field of IP packet headers on outbound packets associated with signaling traffic. The DSCP value is used to classify packets for quality of service (QoS) purposes. If you're not sure what value to use, leave the default of 0.

Field	Description
Management DSCP	The Differentiated Services Code Point value (0 - 63) to put in the DS field of IP packet headers on outbound packets associated with management traffic (including communications to other clusters. The DSCP value is used to classify packets for quality of service (QoS) purposes. If you're not sure what value to use, leave the default of 0.
Default IPv6 gateway	The IPv6 gateway's address and the interface used to access it, generally eth0, specified as: <*IPv6_address*>%eth0
Default IPv4 gateway	If management and signaling traffic are on separate networks, select which of the two networks' gateway servers is the default. Your choice depends on your network configuration and routing. Typically, unless all the endpoints, MCUs, and other devices that communicate with the system are on the same subnet, you'd select the signaling network.

See also:

Local Cluster Configuration on page 63

Local Cluster Configuration Procedures on page 81

Routing Configuration Dialog Box

In the **Network** page's action list, the **Routing Configuration** command opens the **Routing Configuration** dialog box, where you can add or delete network routing rules (IPv4, IPv6, or both, depending on the **System IP type** setting on the **Network** page). The **Show raw routing configuration** button lets you view the operating system's underlying routing configuration.

In a split network configuration, routing rules are necessary for proper routing of network traffic. In a combined network configuration, the operating system's underlying routing configuration is likely sufficient unless you need a special rule or rules for your particular network. If you aren't sure, consult the appropriate IT staff or network administrator for your organization.

Note: Route Configuration Applies to Current Network Settings

You can only configure route settings that are valid for the currently applied settings in **Admin > Local Cluster > Network Settings**. If you need to change the network settings and routing configuration, make and apply the network settings changes first. Keep this in mind if you receive an error when attempting to change the routing configuration.

The following table describes the fields in the **Routing Configuration** dialog box. If **System IP type** is set to IPv4 + IPv6, the dialog box contains two essentially identical sections, one for each IP type. Each section contains the input fields listed below, a table showing the defined routing rules, and buttons for adding and deleting routes.

Field	Description
Host/Network	The IP address of the destination network host or segment.
Prefix length	The CIDR (Classless Inter-Domain Routing) prefix size value (the number of leading 1 bits in the routing prefix mask). This value, together with the **Host/Network** address, defines the subnet for this route. For IPv4, a prefix length of 24 is equivalent to specifying a dotted-quad subnet mask of 255.255.255.0. A prefix length of 16 is equivalent to specifying a subnet mask of 255.255.0.0.
Interface	In split network configuration, select the interface for this route.
Via	IP address of router for this route. Optional, and only needed for non-default routers.

When you add a routing rule, it appears in the table below the input fields. Select a rule and click **Delete selected route** to delete it. Click **Show raw routing configuration** to display the operating system's underlying routing configuration.

See also:

Network Settings on page 63

Time Settings

The following table describes the fields on the **Time Settings** page. These values are normally set in the USB Configuration Utility during system installation and rarely need to be changed. See the *Getting Started Guide*.

Caution: A Restart is Needed After Time Settings Change

Changing time settings requires a system restart and terminates all active conferences.

You can't change the system's time settings while it's integrated with a Polycom RealPresence Resource Manager or CMA system or part of a supercluster. The integration must first be terminated or the cluster removed from the supercluster. See Resource Management System Integration on page 178 or Superclustering on page 226.

We strongly recommend specifying NTP servers.

Field	Description
System time zone	Time zone in which the system is located. We strongly recommend selecting the time zone of a specific geographic location (such as America/Denver), not one of the generic GMT offsets (such as GMT+07 POSIX). If you really want to use a generic GMT offset (for instance, to prevent automatic daylight saving time adjustments), note that they use the Linux/Posix convention of specifying how many hours ahead of or behind local time GMT is. Thus, the generic equivalent of America/Denver (UTC-07:00) is GMT+07, not GMT-07.

Field	Description
Manually set system time	We don’t recommend setting time and date manually.
NTP Servers	Specify up to three time servers for maintaining system time (we recommend three). Enter IP addresses or fully qualified domain names.

See also:

Local Cluster Configuration on page 63

Local Cluster Configuration Procedures on page 81

Licenses

The Polycom RealPresence DMA system is licensed for the number of concurrent calls it can handle and optionally for API access. See License the Polycom RealPresence DMA System on page 32 for more information about licensing.

Licenses for the Appliance Edition

The following table describes the fields on the **Licenses** page when using the Appliance Edition of the RealPresence DMA system.

Field	Description
Active License	
Licensed calls	The maximum number of concurrent calls that the license enables.
Licensed capabilities	Currently, the only separately licensed capability is access to the RealPresence Platform API. **Note:** An API license isn't required in order for a Polycom RealPresence Resource Manager system to access the API. It's only needed for a client application you or a third party develop.
Licensed capabilities	The special features of the Polycom RealPresence DMA system that the license enables.
Activation Keys	
A two-server cluster has two sets of the fields below, one for each server in the cluster.	
System serial number	The serial number of the specified server.
Activation key	The activation key you received from Polycom for this server. The key for each server must be the correct one for that server’s serial number.
End User License Agreement	
Status	The state of acceptance of the EULA; if not accepted, this system is unable to make calls.
User	The user who accepted the EULA.

Field	Description
Date accepted	The GMT date and time of EULA acceptance.
Automatically send usage data	Select to help improve this product by sending anonymous usage data to Polycom. See Automatically Send Usage Data on page 85 for more information.

Licenses for the Virtual Edition

The following table describes the fields on the **Licenses** page when using the Virtual Edition of the RealPresence DMA system.

Field	Description
Active License	
Licensed calls	The maximum number of concurrent calls that the license enables.
Licensed capabilities	Currently, the only separately licensed capability is access to the RealPresence Platform API. **Note:** An API license isn't required in order for a Polycom RealPresence Resource Manager system to access the API. It's only needed for a client application you or a third party develop.
DMA Host	
Host name	The host name of this VM instance, configurable on the **Admin > Local Cluster > Network Settings** page.
Host ID	The VMWare UUID of this VM instance.
License version	The version of the installed license.
Licensing Server	
License server address	The read-only address of the primary licensing server. **Note**: This field is automatically provisioned by RealPresence Platform Director.
Backup server address	The read-only IP address or domain name of the secondary license server. **Note**: This information is automatically provisioned by RealPresence Platform Director.
Port	The port used for communication with the licensing server(s). The default port is 3333.
Last successful connection	The licensing server that the system last communicated with, followed by the time of the last communication.
End User License Agreement	
Status	The state of acceptance of the EULA; if not accepted, this system is unable to make calls.
User	The user who accepted the EULA.

Field	Description
Date accepted	The GMT date and time of EULA acceptance.
Automatically send usage data	Select to help improve this product by sending anonymous usage data to Polycom. See Automatically Send Usage Data on page 85 for more information.

See also:

Local Cluster Configuration on page 63

Local Cluster Configuration Procedures on page 81

Signaling Settings

On the **Signaling Settings** page, you can configure H.323 and SIP signaling.

Note: Supercluster-wide Signaling Settings

Although these are cluster-specific settings that are not part of the data store shared across superclustered systems, we strongly recommend that all signaling settings be the same across all clusters in a supercluster.

The settings for untrusted SIP call handling (“unauthorized” or “guest” calls) *must* be the same across all clusters in a supercluster.

H.323 and SIP Signaling

If H.323 signaling is enabled, the Polycom RealPresence DMA system’s Call Server operates as a gatekeeper, receiving registration requests and calls from H.323 devices. If SIP signaling is enabled, Call Server operates as a SIP registrar and proxy server, receiving registration requests and calls from SIP devices. If both are enabled, the system automatically serves as a SIP <–> H.323 gateway.

As a best practice, we recommend configuring your videoconferencing network in such a way as to avoid using the RealPresence DMA system as a SIP <--> H.323 gateway.

Either H.323, SIP, or both must be enabled in order for the RealPresence DMA system’s Conference Manager to receive calls for multipoint conferences (virtual meeting rooms, or VMRs) and distribute them among its pool of MCUs.

On this page, you can also:

- Turn on H.235 authentication for H.323 devices.
- Turn on SIP digest authentication for SIP devices.
- Click a **Device authentication settings** link to go to the **Device Authentication** page, where you can configure SIP device authentication and maintain the inbound device authentication list for both H.323 and SIP devices (see Device Authentication on page 261).

Note: Authentication for Specific Devices

You can turn authentication off and on for specific devices (assuming that it’s turned on here for that device type). See Edit Device Dialog Box on page 97.

- Configure specific ports or prefixes for untrusted (“unauthorized” or “guest”) SIP calls that can only access specific resources (VMRs, VEQs, or a SIP peer).

H.323 Device Authentication

In an environment where H.235 authentication is used, H.323 devices include their credentials (name and password) in registration and signaling (RAS) requests. The Polycom RealPresence DMA system authenticates requests as follows:

- If it’s a signaling request (ARQ, BRQ, DRQ) from an unregistered endpoint, the Call Server doesn’t authenticate the credentials.
- Otherwise, if the request is from an endpoint and the Polycom RealPresence DMA system is integrated with a Polycom CMA system, the Call Server attempts to authenticate the endpoint’s credentials with the CMA system.
- If it can’t authenticate with the CMA system, or if the request is from an MCU or neighbor gatekeeper, the Call Server attempts to authenticate using its device authentication list.
- If it’s a signaling request from a registered endpoint, or if the request is from an MCU or neighbor gatekeeper, the Call Server attempts to authenticate using its device authentication list (see Device Authentication on page 261).

If the credentials can’t be authenticated, the Call Server rejects the registration or signaling request. For call signaling requests, it also rejects the request if the credentials differ from those with which the device registered.

SIP Device Authentication

The SIP digest authentication mechanism is described in RFC 3261, starting in section 22, and in RFC 2617, section 3. When a SIP endpoint registers with or calls the Polycom RealPresence DMA system, if the request includes authentication information, that information is checked against the Call Server’s local device authentication list (see Device Authentication on page 261).

SIP authentication can be enabled at the port/transport level or (for “unauthorized” access prefixes) the prefix level.

If SIP authentication is enabled and an endpoint’s request doesn’t include authentication information, the Call Server responds with an authentication challenge containing the required fields (see the RFCs). If the endpoint responds with valid authentication information, the system accepts the registration or call.

Note: SIP Device Authentication

If inbound SIP authentication is turned on for a port or prefix, the Polycom RealPresence DMA system challenges any SIP message coming to the system via that port or with that prefix. Any SIP peer and other device that interacts with the system by those means must be configured to authenticate itself, or you must turn off **Device authentication** for that specific device. See Edit Device Dialog Box on page 97.

Untrusted SIP Call Handling Configuration

You can configure special handling for SIP calls from devices outside the corporate firewall that aren’t registered with the Polycom RealPresence DMA system and aren’t from a federated division or enterprise. These calls come to the RealPresence DMA system via SIP session border controllers (SBCs) such as a Polycom RealPresence Access Director or Acme Packet Session Border Controller device (which are configured as SIP peers in the RealPresence DMA system; see External SIP Peer on page 105).

You can route such untrusted (“unauthorized” or “guest”) calls by creating a separate set of “guest” dial rules used only for these untrusted calls. See Dial Rules on page 239.

Depending on the SIP SBC and how it’s configured, such calls can be distinguished in one of two ways:

- By port: The SBC routes untrusted calls to a specific port.
- By prefix: The SBC adds a specific prefix in the Request-URI of the first INVITE message for the call.

The RealPresence Access Director SBC supports only the prefix method. The Acme Packet Session Border Controller SBC can be configured for either.

In the **SIP Settings** section of the page, you can add one or more ports, prefixes, or both for untrusted calls. For each entry, you can specify whether authentication is required. Calls to an untrusted call prefix follow the authentication setting for that prefix, not for the port on which they’re received. For port entries, you can also specify the transport, and if TLS, whether certificate validation is required (mTLS).

Note: Require Certificate Validations for TLS

If **Allow certificate validation skipping for encrypted signaling** is turned off on the **Security Settings** page, then **Require certificate validation for TLS** is turned on for both authorized and unauthorized ports, and it can’t be turned off. See Security Settings on page 50.

Signaling Settings Fields

The following table describes the fields on the **Signaling Settings** page.

Field	Description
H.323 Settings	
Enable H.323 signaling	Enables the system to receive H.323 calls. **Caution:** Disabling H.323 terminates any existing H.323 calls. When you click **Update**, the system prompts you to confirm.
Status	Indicates whether the system’s H.323 gatekeeper functions are active.
H.225 port	Specifies the port number the system’s gatekeeper uses for call signaling. We recommend using the default port number (1720), but you can use the same value as the RAS port or any other value from 1024 to 65535 that’s not already in use.
RAS port	Specifies the port number the system’s gatekeeper uses for RAS (Registration, Admission and Status). We recommend using the default port number (1719), but you can use the same value as the H.225 port or any other value from 1024 to 65535 that’s not already in use.
H.245 open firewall ports	Shows the port range used for H.245 so you can configure your firewall accordingly. This is display only.
H.323 multicast	Enables the system to support gatekeeper discovery (GRQ messages from endpoints) as described in the H.323 and H.225.0 specifications.

Field	Description
Enable H.323 device authentication	Check the box to turn on H.323 device authentication. Click **Device authentication settings** to go to the **Device Authentication** page and add authentication credentials (see Device Authentication on page 261).
SIP Settings	
Enable SIP signaling	Enables the system to receive Session Initiation Protocol (SIP) calls. **Caution:** Disabling SIP terminates any existing SIP calls. When you click **Update**, the system prompts you to confirm.
Enable ANAT support	Configures the system to pass through Alternative Network Address Types (ANAT) signaling (RFC 4091 and RFC 4092) in the Session Description Protocol (SDP) for the purpose of negotiating IP version in a dual-stack (IPv4 + IPv6) environment.
Authorized ports	
Unencrypted SIP port	To permit unencrypted SIP connections, select either **TCP** or **UDP/TCP** from the list. Select **None** to disallow unencrypted SIP connections. We recommend using the default port number (5060), but you can use any value from 1024 to 65535 that's not already in use and is different from the TLS port and from any "unauthorized" or "guest" ports that your SBC(s) may be configured to use for calls to the system.
Enable authentication	Check the box to turn on SIP device authentication for unencrypted SIP. Click the **Device authentication settings** link to go to the **Device Authentication** page to configure SIP device authentication and add device authentication credentials (see Device Authentication on page 261). The settings on that page determine: • The realm used for authentication. • Whether the Call Server responds to unauthenticated requests with 401 (Unauthorized) or 407 (Proxy Authentication Required).
TLS port	Specifies the port number the system uses for TLS. We recommend using the default port number (5061), but you can use any value from 1024 to 65535 that's not already in use and is different from the UDP/TCP port and from any "unauthorized" or "guest" ports that your SBC(s) may be configured to use for calls to the system. If SIP signaling is enabled, TLS is automatically supported. Unless unencrypted SIP connections are specifically permitted, TLS must be used.
Enable authentication	Check the box to turn on SIP device authentication for encrypted SIP. Click the **Device authentication settings** link to go to the **Device Authentication** page to configure SIP device authentication and add device authentication credentials (see Device Authentication on page 261). The settings on that page determine: • The realm used for authentication. • Whether the Call Server responds to unauthenticated requests with 401 (Unauthorized) or 407 (Proxy Authentication Required).

Field	Description
Require certificate validation for TLS	Check the box to enable mutual TLS (mTLS), requiring each caller to present a valid certificate.
Unauthorized ports	Lists the ports used by your SBC(s) for untrusted calls, showing the transport type for each and, for TLS, whether a certificate is required. The **Authentication** column indicates whether calls to that port are passed without challenge, challenged for authentication credentials, or blocked. Click **Add** to add a port to the list (see Add Guest Port Dialog Box on page 76). Click **Edit** to edit the selected entry (see Edit Guest Port Dialog Box on page 77) or **Delete** to delete it.
Unauthorized prefixes	Lists the prefixes used by your SBC(s) for untrusted calls. The **Strip Prefix** column indicates whether the RealPresence DMA system should immediately strip the prefix. The **Authentication** column indicates whether calls to that port are passed without challenge, challenged for authentication credentials, or blocked. Click **Add** to add a prefix to the list (see Add Guest Prefix Dialog Box on page 78). Click **Edit** to edit the selected entry (see Edit Guest Prefix Dialog Box on page 79) or **Delete** to delete it.

See also:

Local Cluster Configuration on page 63

Local Cluster Configuration Procedures on page 81

Add Guest Port Dialog Box

The **Add Guest Port** dialog box appears when you click the **Add** button next to the **Unauthorized ports** list in the **SIP Settings** section of the **Signaling Settings** page. It lets you add a port to the list of ports used for “unauthorized” or “guest” calls.

The following table describes the fields in the **Add Guest Port** dialog box.

Field	Description
Port	The SIP signaling port number for this entry. This is the port number that an SBC is configured to use for untrusted calls to the RealPresence DMA system via the transport specified below.
Transport	To use this guest port for unencrypted SIP connections, select either **TCP** or **UDP/TCP** from the list. To use this port for encrypted SIP connections, select **TLS**.

Field	Description
Require certificate validation for TLS	For TLS transport, check this box to enable mutual TLS (mTLS), requiring callers to present a valid certificate. **Note:** If **Skip certificate validation for encrypted signaling** is turned off on the **Security Settings** page, then **Require certificate validation for TLS** is turned on for both authorized and unauthorized ports, and it can't be turned off. See Security Settings on page 50.
Authentication	Select one of the following: • **None** — The system doesn't issue authentication challenges or check authentication credentials for calls to this port. • **Authenticate** — The system issues authentication challenges and checks authentication credentials for calls to this port. The settings on the **Device Authentication** page (see Device Authentication on page 261) determine the realm used for authentication and whether the Call Server responds to unauthenticated requests with 401 (Unauthorized) or 407 (Proxy Authentication Required). • **Block** — The system blocks calls to this port.

See also:

Signaling Settings on page 72

Local Cluster Configuration Procedures on page 81

Edit Guest Port Dialog Box

The **Edit Guest Port** dialog box lets you edit an **Unauthorized ports** list entry in the **SIP Settings** section of the **Signaling Settings** page.

The following table describes the fields in the **Edit Guest Port** dialog box.

Field	Description
Port	The SIP signaling port number for this entry. This is the port number that an SBC is configured to use for untrusted calls to the RealPresence DMA system via the transport specified below.
Transport	To use this guest port for unencrypted SIP connections, select either **TCP** or **UDP/TCP** from the list. To use this port for encrypted SIP connections, select **TLS**.

Field	Description
Require certificate validation for TLS	For TLS transport, check this box to enable mutual TLS (mTLS), requiring callers to present a valid certificate. **Note:** If **Skip certificate validation for encrypted signaling** is turned off on the **Security Settings** page, then **Require certificate validation for TLS** is turned on for both authorized and unauthorized ports, and it can't be turned off. See Security Settings on page 50.
Authentication	Select one of the following: • **None** — The system doesn't issue authentication challenges or check authentication credentials for calls to this port. • **Authenticate** — The system issues authentication challenges and checks authentication credentials for calls to this port. The settings on the **Device Authentication** page (see Device Authentication on page 261) determine the realm used for authentication and whether the Call Server responds to unauthenticated requests with 401 (Unauthorized) or 407 (Proxy Authentication Required). • **Block** — The system blocks calls to this port.

See also:

Signaling Settings on page 72

Local Cluster Configuration Procedures on page 81

Add Guest Prefix Dialog Box

The **Add Guest Prefix** dialog box appears when you click the **Add** button next to the **Unauthorized prefixes** list in the **SIP Settings** section of the **Signaling Settings** page. It lets you add a prefix to the list of prefixes used for "unauthorized" or "guest" calls.

The following table describes the fields in the **Add Guest Prefix** dialog box.

Field	Description
Prefix	The prefix number for this entry. This is the number that an SBC is configured to add to the Request-URI of the first INVITE message for untrusted calls to the RealPresence DMA system.

Field	Description
Strip prefix	Check this box to have the system immediately strip this prefix from the INVITE message.
Authentication	Select one of the following: • **None** — The system doesn't issue authentication challenges or check authentication credentials for calls with this prefix. • **Authenticate** — The system issues authentication challenges and checks authentication credentials for calls with this prefix. The settings on the **Device Authentication** page (see Device Authentication on page 261) determine the realm used for authentication and whether the Call Server responds to unauthenticated requests with 401 (Unauthorized) or 407 (Proxy Authentication Required). • **Block** — The system blocks calls with this prefix.

See also:

Signaling Settings on page 72

Local Cluster Configuration Procedures on page 81

Edit Guest Prefix Dialog Box

The **Edit Guest Prefix** dialog box lets you edit an **Unauthorized prefixes** list entry in the **SIP Settings** section of the **Signaling Settings** page.

The following table describes the fields in the **Edit Guest Prefix** dialog box.

Field	Description
Prefix	The prefix number for this entry. This is the number that an SBC is configured to add to the Request-URI of the first INVITE message for untrusted calls to the RealPresence DMA system.
Strip prefix	Check this box to have the system immediately strip this prefix from the INVITE message.
Authentication	Select one of the following: • **None** — The system doesn't issue authentication challenges or check authentication credentials for calls with this prefix. • **Authenticate** — The system issues authentication challenges and checks authentication credentials for calls with this prefix. The settings on the **Device Authentication** page (see Device Authentication on page 261) determine the realm used for authentication and whether the Call Server responds to unauthenticated requests with 401 (Unauthorized) or 407 (Proxy Authentication Required). • **Block** — The system blocks calls with this prefix.

See also:

Signaling Settings on page 72

Local Cluster Configuration Procedures on page 81

Logging Settings

The following table describes the fields on the **Logging Settings** page.

Field	Description
Logging level	Leave the default, **Debug**, unless advised to change it by Polycom support. **Production** reduces system overhead and log file sizes, but omits information that's useful for troubleshooting. **Verbose debug** is not recommended for production systems.
Rolling frequency	If rolling the logs daily (the default) produces logs that are too large, shorten the interval.
Retention period (days)	The number of days to keep log archives. For most systems, we recommend setting this to 7.
Local log forwarding	Enables you to forward selected log entries to a central log management server (such as Graylog2). Specify: • The address of the destination server. It must be running some version of syslog. • The socket type (transport) for which the destination server's version of syslog is configured. Most versions of syslog support only UDP, the default, but syslog-ng also supports TCP. • The facility value. Default is **Local0**. • The log or logs to forward. **Note:** The RealPresence DMA system's server.log entries are mapped to syslog-compliant severities (a "warn" message from server.log arrives at the destination server with the syslog-compliant "warn" level). All other logs being forwarded are assigned the syslog-compliant "notice" severity. Each log message is forwarded with its server-side timestamp intact. The receiving syslog adds its own timestamp, but preserving the RealPresence DMA-applied timestamp makes it easier to accurately troubleshoot time-sensitive events.

See also:

Licenses for the Appliance Edition on page 70

Alerting Settings

The **Alerting Settings** page allows you to configure thresholds for system alerts. Here, you can enable or disable certain alerts, and control when they will be triggered.

Note: SNMP and System Alerts Configuration
Since the triggering of SNMP alerts coincides with system alerts, configuration on this page applies to both system alerts and SNMP alerts.

The **Threshold Value** column on the right of the page lists the configurable value for each alert's threshold. Use the arrows next to each field or enter a new number to change the default value. Click the **Update** button to save your changes, or the **Select Defaults** button to revert them (**Select Defaults** returns the values in all fields on this page to their factory defaults).

See the below table for descriptions of each alert's condition.

Alert ID	Threshold Condition	Description
3103	Days until server certificate expires is less than	Alert when there are only this many days until the system's security certificate expires.
3105	Days until CA certificate expires is less than	Alert when there are only this many days until the server's CA-signed security certificate expires.
3401	Percentage available disk space is less than	Alert when the percentage of free disk space available on the DMA system falls below this value.
3404	Percentage log file usage is greater than	Alert when the percentage of the log file storage area used by log data is above this value.
3405	Percentage CPU utilization is greater than	Alert when system CPU utilization is between this lower limit, and...
	And percentage CPU utilization is less than or equal to	...this upper limit.
3406	Percentage CPU utilization is greater than	Alert when system CPU utilization is above this value.
5002	Number of hyperactive, blacklisted endpoints is greater than	Alert when the number of registered endpoints that are blacklisted for sending too much H.323 traffic is above this value.

Local Cluster Configuration Procedures

This section describes the following Polycom RealPresence DMA 7000 system configuration procedures:

- Add Licenses
- Configure Signaling

- Configure Logging

If you're performing the initial configuration of your Polycom RealPresence DMA system, study Polycom® RealPresence DMA® System Initial Configuration Summary on page 29 before you continue. Other tasks are required that are described elsewhere.

Add Licenses

Adding licenses to your Polycom RealPresence DMA system is a two-step process:

- Request a software activation key code for each server.
- Enter the activation key codes into the system.

The procedures below describe the process.

To request a software activation key code for each server

1. Log into the Polycom RealPresence DMA system as an administrator and go to **Admin > Local Cluster > Licenses**.
2. Record the serial number for each Polycom RealPresence DMA server:

   Server A: _____

   Server B: _____ (none for single-server system)
3. Go to http://www.polycom.com/activation.
4. If you don't already have one, register for an account. Then log in.
5. Select **Product Activation**.
6. In the **License Number** field, enter the software license number listed on the first (or only) server's License Certificate (shipped with the product).
7. In the **Serial Number** field, enter the first (or only) server's serial number (which you recorded in step 2).
8. Click **Generate**.
9. When the activation key for the first (or only) server appears, record it:

   Server A: _____-_____-_____-_____
10. If you have a single-server Polycom RealPresence DMA system, you're finished with this procedure. Continue to the next procedure.
11. If you have a two-server cluster, repeat steps 6–8, this time entering the second license number you received and the second server's serial number (also recorded in step 2).

Caution: Activation Keys Linked to the Server Serial Number

An activation key is linked to a specific server's serial number. For a two-server cluster, you must generate the activation key for each server using that server's serial number. Licensing will fail if you generate both activation keys from the same server serial number.

12. When the activation key for the second server appears, record it:

    Server B: _____-_____-_____-_____

To enter license activation key codes

1. Go to **Admin > Local Cluster > Licenses**.
2. In the **Activation key** field for the first (or only) server, enter the activation key code that was generated for that server's serial number.

Caution: Activation Keys Linked to the Server Serial Number
An activation key is linked to a specific server's serial number. Each **Activation Key** field is labeled with a serial number. For a two-server cluster, make sure that the activation key code you enter for each server is the correct one for that server's serial number.

3. If you have a two-server cluster, in the **Activation key** field for the second server, enter the activation key code that was generated for that server's serial number.
4. Click **Update**.

   A dialog box informs you that the licenses have been updated.
5. Click **OK**.

See also:

Licenses on page 70

Configure Signaling

To configure signaling

1. Go to **Admin > Local Cluster > Signaling Settings**.
2. To make the system accessible via H.323 calls:
   a. Select **Enable H.323 signaling**.
   b. Leave the default port numbers (1720 for H.225, 1719 for RAS) unless you have a good reason for changing them.
   c. Select **H.323 multicast** to support gatekeeper discovery messages from endpoints.
   d. To turn on H.235 authentication, select **Enable H.323 device authentication**.

      Device authentication credentials must be added on the **Inbound Authentication** tab of the **Device Authentication** page. Click the **Device authentication settings** link to go directly there.
3. To make the system accessible via SIP calls:
   a. Select **Enable SIP signaling**.
   b. To enable pass-through of ANAT signaling (RFC 4091 and RFC 4092) in the Session Description Protocol (SDP) for the purpose of negotiating IP version in a dual-stack (IPv4 + IPv6) environment, select **Enable ANAT support**.
   c. If the system's security settings permit unencrypted SIP connections, optionally set **Unencrypted SIP port** to **TCP** or **UDP/TCP**.

      You must have the Administrator role to change security settings. See Security Settings on page 50.

Note: Understanding SIP Communications

The system only answers UDP calls if that transport is enabled. But for communications back to the endpoint, it uses the transport protocol that the endpoint requested (provided that the transport is enabled, and for TCP, that unencrypted connections are permitted).

For more information about this and other aspects of SIP, see RFC 3261.

d Leave the default port numbers (5060 for TCP/UDP, 5061 for TLS) unless you have a good reason for changing them.

e To turn on SIP digest authentication for either the unencrypted or TLS port, select the corresponding **Enable authentication** check box.

Device authentication credentials must be added on the **Inbound Authentication** tab of the **Device Authentication** page. Click the **Device authentication settings** link to go directly there.

f To enable mutual TLS (mTLS), select **Require certificate validation for TLS**.

4 To enable the system to receive untrusted calls (see Untrusted SIP Call Handling Configuration on page 73) from SIP session border controllers (SBCs) configured to route such calls to special ports, do the following:

a Under **Unauthorized ports**, click **Add**.

The **Add Guest Port** dialog box opens.

b Specify the port number, the transport, whether authentication is required, and for TLS, whether certificate validation is required (mTLS). Click **OK**.

The new entry is added to the **Unauthorized ports** list.

c Repeat for each additional port on which to receive “unauthorized” or “guest” calls.

5 To enable the system to receive untrusted calls (see Untrusted SIP Call Handling Configuration on page 73) from SIP session border controllers (SBCs) configured to add a specific prefix in the Request-URI of the INVITE message for such calls, do the following:

a Under **Unauthorized prefixes**, click **Add**.

The **Add Guest Prefix** dialog box opens.

b Specify the prefix number, whether it should be stripped, and whether authentication is required. Click **OK**.

The new entry is added to the **Unauthorized prefixes** list.

c Repeat for each additional prefix used for “unauthorized” or “guest” calls.

6 Click **Update**.

A dialog box informs you that the configuration has been updated.

7 Click **OK**.

The system processes the configuration. The **Status** field shows the current H.323 signaling state.

8 If you enabled the system to receive “unauthorized” or “guest” calls, do the following:

a Go to **Admin > Call Server > Dial Rules** and click in the **Dial rules for unauthorized calls** list to give it focus.

b Add one or more dial rules to be used for routing “unauthorized” or “guest” calls. See Dial Rules on page 239.

An unauthorized call rule can route calls to a conference room ID (virtual meeting room, or VMR), a virtual entry queue (VEQ), or a SIP peer.

Note: SIP URL Dialing Format

From SIP endpoints, users generally must dial (if a prefix is being used):

<prefix><VMR number>@<RealPresence DMA virtual host name or IP>

Depending on local DNS configuration, the host name could be the RealPresence DMA system's FQDN or a shorter name that DNS can resolve.

For example, if the RealPresence DMA system's virtual host name is dma-virt, the E.164 dial string prefix is 77, and the virtual meeting room number of the conference is 1001, SIP endpoint users dial:

771001@dma-virt

Depending on the network infrastructure and proxy server(s), it may be possible to use dial rules to enable numeric-only dialing (for instance, 771001) from SIP endpoints. Doing so is beyond the scope of this topic.

See also:

Signaling Settings on page 72

Configure Logging

To configure logging

1. Go to **Admin > Local Cluster > Logging Settings**.
2. Change **Rolling frequency** and **Retention period** as desired.
3. If requested to do so by Polycom support, change **Logging level**.
4. Click **Update**.

   A dialog box informs you that the configuration has been updated.
5. Click **OK**.

See also:

Logging Settings on page 80

Automatically Send Usage Data

To continually improve the product, it is important to gain understanding of how the RealPresence DMA 7000 system is used by customers. By collecting this data, Polycom can identify both the system level utilization and the combination and usage of RealPresence DMA features. This usage data will inform Polycom which features are important and are actually used on your system. Polycom will use this information to help guide future development and testing to concentrate on the areas of RealPresence DMA that are most heavily used. If you choose not to send this information, Polycom is less aware of which features are important to you and that are used by you, which may influence future development to go in directions that are less beneficial to you.

Your decision to enable or not enable the sending of this data does not affect the availability of any documented system feature in any way. Enabling this feature does not affect the capacity or responsiveness of the RealPresence DMA system to process calls, conferences, GUI or API interactions.

The system sends the data once per hour over a secured (TLS) connection to a Polycom collection point (customerusagedatacollection.polycom.com). There is no access by any customer or others to view the data received at the collection point. The raw data will be viewable only by Polycom. To avoid any impact to

starting and ending calls and conferences, data is never sent between 5 minutes before the hour and 5 minutes after the hour.

- The following types of data are reported:
- License information
- Hardware configuration
- System resource usage: CPU, RAM, disk, database
- System configuration: number of servers, clusters
- Feature configuration: Enterprise Directory Integration, Lync, Dial Rules, Shared Number Dialing, Hunt Groups, Registration Policy, Device Authentication
- Number of users, endpoints, sites, MCUs, external gatekeepers, SIP peers, SBCs
- Registrations, call and conference statistics (see Network Usage Report on page 415)
- Security settings

When this information is reported, a customer's user and environment identifying information (e.g., internal IP addresses and FQDNs, names of users, devices, external systems, etc.) are anonymized before being sent from the system. System serial numbers and license information are sent without anonymization and may be used to help improve customer experiences. In total, less than 100KB of data per hour is collected and sent.

Polycom's collection and use of this data complies with Polycom's Privacy Policy.

Enable or Disable Automatic Data Collection

Initially, you can decide to allow or disallow the automatic sending of usage data when the system's End User License Agreement is presented.

You can view and change the current status of usage data sending and collection on the **Admin > Local Cluster > Licenses** page. Usage data is being sent only if the **Automatically send usage data** field is checked. By changing the value of this field, you can enable or disable this feature at any time.

See the Collected Data

The system records data that has been sent and collected in the system logs.

To see the collected data

1. Log in to the RealPresence DMA system as an Administrator.
2. Download the system logs. See System Logs Procedures on page 371.
3. On the PC where the logs have been downloaded, use an archiving or zipping tool to extract the file analytics.json.

   Analytics.json is a text file containing the hourly data reported most recently before the time when the system logs were created.
4. View the analytics.json file with Notepad or another common text editing tool.

Device Management

This chapter describes the following Polycom® RealPresence® Distributed Media Application™ (DMA®) 7000 system's network device management pages:

- Active Calls
- Endpoints
- Site Statistics
- Site Link Statistics
- External Gatekeeper
- External SIP Peer
- External H.323 SBC

Other **Network** menu topics are addressed in the following chapters:

- Superclustering on page 226 (RealPresence DMAs)
- MCU Management on page 124
- Site Topology on page 278

Active Calls

The **Active Calls** page lets you monitor the calls in progress (managed by the Call Server) and disconnect an active call.

The search pane above the two lists lets you find calls matching the criteria you specify. Click the down arrow to expand the search pane. You can search for an originator or destination device by its name, alias, or IP address. You can limit your search by specifying one or more of the following:

- Cluster, territory, or site.
- Signaling type (H.323 or SIP) or registration status of the call originator.
- Class of service or bit rate range.

The system matches any string you enter against the beginning of the values for which you entered it. If you enter "10.33.17" in the **Originator** field, it displays calls from devices whose IP addresses are in that subnet. To search for a string not at the beginning of the field, you can use an asterisk (*) as a wildcard.

Leave a field empty (or select the blank entry from a list) to match all values.

Note: Use Specific Filter Strings
Specifying a filter that includes too many active calls can be a drain on system resources.

The calls that match your search criteria (up to 500) appear in the lower list. You can pin a call that you want to study. This moves it to the upper list, and it remains there, even after the call ends, until you unpin it.

Details about the selected call are available in the **Call Info**, **Originator**, **Destination**, and **Bandwidth** tabs of the pane on the right. This information (and more) is also available in the **Call Details** dialog box, which

appears when you click **Show Call Details** (in the **Actions** list). See Call Details Dialog Box on page 88 for descriptions of the data.

Note: Cluster vs. Supercluster Call Statistics
If a call traverses multiple clusters in a supercluster, it's counted as a single call, but it appears in the results of each cluster it touches when you search by cluster. Therefore, the sum of the number of calls for each cluster may be greater than the total number of calls for the entire supercluster.

The following table describes the parts of the **Active Calls** list.

Column	Description
(Pin State)	Click to pin a call, moving it to the top list and keeping its information available even if the call ends. Click again to unpin it.
Start Time	Time the call began (first signaling event).
Originator	Source of the call (the device's display name, if available; otherwise, its name, alias, or IP address, in that order of preference). If the originator is an MCU, the MCU name.
Dial String	Dial string sent by originator, when available.
Destination	Destination of the call (the device's display name, if available; otherwise, its name, alias, or IP address, in that order of preference). If the destination is an MCU, the MCU name.
Bit Rate	Bit rate (kbps) of the call. A down arrow indicates that the call was downspeeded. Hover over it to see details.
Class of Service	Class of service (Gold, Silver, or Bronze) of the call.

See also:

Device Management on page 87
Call Details Dialog Box on page 88
Endpoints on page 91

Call Details Dialog Box

The **Call Details** dialog box appears when you click **Show Call Details** on the **Active Calls** page or **Call History** page. It provides detailed information about the selected call.

The following table describes the fields in the dialog box.

Tab/Field/Column	Description
Call Info	
Call Info	Displays the call's: • Status (active/ended and pinned/unpinned) • Start time and end time • Duration • Signaling protocol(s) • Polycom RealPresence DMA server(s) involved • Unique call ID • Dial string, if available • Final dial string (after processing by dial rules)
Originator	Displays the source device's: • Name and authentication name • Authentication status • Model and version • Aliases • IP address or host name • Registration status • Site and territory If this is a registered endpoint or a registered/configured MCU, a link takes you to the corresponding page with that endpoint or MCU selected.
Destination	Displays the destination device's: • Name and authentication name • Authentication status • Model and version • Aliases • IP address or host name • Registration status • Site and territory If this is a registered endpoint or a registered/configured MCU, a link takes you to the corresponding page with that endpoint or MCU selected.

Tab/Field/Column	Description
Bandwidth	Available only after the call has ended. The table at the top lists each throttle point that the call traverses and shows its: • Bit rate limit per call (kbps) • Total capacity (kbps) • Used bit rate (kbps) in each class of service • Weight (%) • Territory If the throttle point is a subnet, site, or site link, a link takes you to the corresponding site topology page with the throttle point entity selected. Below the table, the data used in bandwidth processing is displayed (all bit rates are kbps): • Formal maximum bit rate limit — the maximum allowed bit rate considering the per call bit rates of each throttle point, but not considering total capacity or current usage • Available bit rate capacity in each class of service and for the call's class • Class of service for the call • Minimum downspeed bit rate • Available bit rate limit (%) — the maximum percentage of remaining bandwidth at a throttle point that will be given to any one call (configurable on the Call Server Settings page) • Requested bit rate • Final bit rate
Call Events	Lists each call event in the call and its attributes. When the system is operating as a SIP proxy server, the list includes all SIP signaling messages except 100 TRYING. Hover over an attribute label to see a description. Click **Show Message** to see the signaling message. Click **Show QoS Data** to see detailed quality of service statistics.
Subscription Events	For conference (VMR) calls, lists SUBSCRIBE/NOTIFY events, if any, associated with this call. The SIP SUBSCRIBE/NOTIFY conference notification service (as described in RFCs 3265 and 4575), allows SIP devices (generally, conference participants) to subscribe to a conference and receive conference rosters and notifications of conference events. The rosters identify the participants, their endpoints, and their video streams. Hover over an attribute label to see a description. Click **Show Message** to see the signaling message. **Note:** If the system is configured to let devices subscribe to a conference without being participants in the conference (see Security Settings on page 50), the call history doesn't include data for such non-participant subscriptions. But be aware that a subscription to a conference by a non-participant consumes a call license.

Tab/Field/Column	Description
Property Changes	Lists each property change in the call, showing the value, time, and sequence number of the associated event.
QoS	Quality of service data is only available if one of the endpoints is a registered H.323 endpoint that supports IRQs. This tab displays a graph showing how QoS varied during the call. The horizontal scale and frequency of data points (dots on the lines of the graph) vary based on the length of the call. Hover over a data point to see the value at that point.

See also:

Active Calls on page 87

Endpoints

The **Endpoints** page provides access to information about the devices known to the Polycom RealPresence DMA system. From it, you can:

- View details about a device.
- View the call history or registration history of a device.
- Add aliases for a device, edit or delete added aliases (but not aliases with which the device registered), and configure the class of service settings.
- Block a device, which prevents it from registering.
- Unblock a blocked device, allowing it to register.
- Quarantine a device, which allows it to register (or remain registered), but not to make or receive calls.
- Remove a quarantined device from quarantine, allowing it to make and receive calls.
- Delete an inactive device or devices. An inactive device is one whose registration has expired. Depending on your **Registration Policy** settings (see Registration Policy on page 264), inactive devices may be automatically deleted after a specified number of days.
- Select multiple devices to block/unblock, quarantine/unquarantine, delete, or change specific settings of (device authentication, permanent registration, and class of service).
- Manually add a device. The registration status of the device depends on the system's registration policy (see Add Endpoint Dialog Box on page 96).
- Associate a user with a device.

Note: Resource Management Integration and User-to-Device Association
If the Polycom RealPresence DMA system is integrated with a Polycom RealPresence Resource Manager or CMA system, it receives user-to-device association information from that system, and you can only associate users with devices on the Polycom RealPresence Resource Manager or CMA system.

The search pane above the list lets you find devices matching the criteria you specify. The default search finds all endpoints with active registrations. Click the down arrow to expand the search pane.

The system matches any string you enter against the beginning of the values for which you entered it. If you enter “10.33.17” in the **IP address** field, it displays devices whose IP addresses are in that subnet. To search for a string not at the beginning of the field, you can use an asterisk (*) as a wildcard.

Leave a field empty (or select the blank entry from a list) to match all values.

Check **Exceptions** to find devices for which the registration policy script returned an exception. Leave the field to the right empty to match all exception values, or enter a search string to find only exceptions matching that string.

Check **Exceptions** and enter an exclamation point (!) in the field to the right to find only devices with no exceptions.

The devices that match your search criteria (up to 500) are listed below.

The following table describes the parts of the **Endpoints** list.

Column	Description
Name	The name of the device.
Model	The model designation of the device.
IP Address	The IP address of the device.
Alias	The aliases, if any, assigned to the device.
Site	The site to which the device belongs.
Owner Domain	The domain to which the device’s owner, if any, belongs.
Owner	The user who owns the device.
Class of Service	The class of service assigned to the device: • Gold • Silver • Bronze • Inherit from associated user (if none, default to Bronze) **Note:** When a device calls a conference room (VMR), the class of service of the conference room applies to the call, not the class of service of the device.
Admission Policy	Indicates the admission policy applied to the device: • Allow • Block • Quarantine • Reject
Compliance Level	Indicates whether the device is compliant or noncompliant with the applicable registration policy script (see Registration Policy on page 264).

Column	Description
Registration Status	The registration status of the device: • Active — The device is registered and can make and receive calls. • Inactive — The device's registration has expired. Whether it can make and receive calls depends on the system's rogue call policy (see Call Server Settings on page 234) and. It can register again. • Quarantined — The device is registered, but it can't make or receive calls. It remains in Quarantined or Quarantined (Inactive) status until you remove it from quarantine. • Quarantined (Inactive) — The device was quarantined, and its registration has expired. It can register again, returning to Quarantined status. • Blocked — The device is not permitted to register. It remains blocked from registering until you unblock it. If the device is in a site managed by the system, its ability to make and receive calls depends on the system's rogue call policy (see Call Server Settings on page 234). If the device is not in a site managed by the system, it can't make or receive calls. A device's status can be determined by: • An action by the device. • An action applied to it manually on this page. • The expiration of a timer. • The application of a registration policy and admission policy (see Registration Policy on page 264).
Exceptions	Shows any exceptions with which the device was flagged as a result of applying a registration policy.
Active Calls	Indicates if the device is in a call.
Device Authentication	Indicates whether the endpoint must authenticate itself. **Note:** Inbound authentication for the device type must be enabled at the system level (see Device Authentication on page 261), or the setting for the device has no effect.

The **Actions** list associated with the **Endpoints** list contains the items in the following table.

Command	Description
View Details	Opens the **Device Details** dialog box for the selected endpoint.
Add	Opens the **Add Endpoint** dialog box, where you can manually add a device to the system.
Edit	Opens the **Edit Endpoint** dialog box for the selected endpoint, where you can change its information and settings. If multiple endpoints are selected, opens the **Edit Endpoint**dialog box, where you can change the device authentication, permanent registration, and class of service settings.

Command	Description
Delete	Removes the registration of the selected endpoint(s) with the Call Server and deletes the endpoint(s) from the Polycom RealPresence DMA system. A dialog box asks you to confirm. Unregistered endpoints are treated like rogue endpoints (see Call Server Settings on page 234). The device can register again.
Associate User	Opens the **Associate User** dialog box for the selected endpoint, where you can associate this device with a user. Not available if the Polycom RealPresence DMA system is integrated with a Polycom RealPresence Resource Manager or CMA system. In that case, it receives user-to-device association information from that system.
Block Registrations	Prevents the endpoint(s) from registering with the Call Server. A dialog box asks you to confirm. When blocked endpoints are selected, this becomes **Unblock Registrations**. If a blocked device is in a site managed by the system, its ability to make and receive calls depends on the system's rogue call policy (see Call Server Settings on page 234). If the device is not in a site managed by the system, it can't make or receive calls.
Quarantine	Prevents the endpoint(s) from making or receiving calls. A dialog box asks you to confirm. When quarantined endpoints are selected, this becomes **Unquarantine**. Unlike a blocked endpoint, a quarantined endpoint is registered (or can register) with the Call Server.
View Call History	Takes you to **Reports > Call History** and displays the call history for the selected endpoint.
View Registration History	Takes you to **Reports > Registration History** and displays the registration history for the selected endpoint.

Names/Aliases in a Mixed H.323 and SIP Environment

An endpoint that supports both H.323 and SIP can register with the Polycom RealPresence DMA system's gatekeeper and SIP registrar using the same name/alias. When the RealPresence DMA system receives a call for that endpoint, it uses the protocol of the calling endpoint. This is logical and convenient, but it can lead to failed calls under the following circumstances:

- The system is configured to allow calls to/from rogue (not actively registered) endpoints (see Call Server Settings on page 234).
- An endpoint that was registered with both protocols (using the same name/alias) later has one of the protocols disabled, and that registration expires (or otherwise becomes inactive).

The Polycom RealPresence DMA system doesn't know if the endpoint no longer supports that protocol. When another endpoint tries to call using the called endpoint's disabled protocol, the system still tries to reach it using that protocol, and the call fails.

To avoid this problem, you can do one of the following:

- Ensure that endpoints supporting both protocols use different names/aliases for each protocol.
- Don't allow calls to/from rogue endpoints.

- If you know an endpoint has stopped supporting a protocol, manually delete its inactive registration for that protocol.

Naming ITP Systems Properly for Recognition by the Polycom RealPresence DMA System

A Polycom Immersive Telepresence (ITP) room system contains multiple displays and codecs (endpoints). If the ITP system is using SIP or H.323 signaling (not Cisco TIP signaling), then in order for the Polycom RealPresence DMA system to recognize these devices as part of an ITP system, they must have names that properly identify them. The names must take the form *systemName_M_N*, where M is the total number of displays in the ITP system (2, 3, or 4) and N is the sequence number of each display. The “primary” codec must be assigned sequence number 1.

For example, the three HDX devices in a Polycom OTX 300 ITP system named Bainbridge might be named as follows:

Bainbridge ITP_3_1
Bainbridge ITP_3_2
Bainbridge ITP_3_3

When these three devices register (H.323 or SIP) with the Polycom RealPresence DMA system’s Call Server, the RealPresence DMA system recognizes them as constituting a single ITP system and assigns them a Gold class of service (you can change this if you wish). The RealPresence DMA system also manages the device authentication settings as applying to a single system.

You can only edit the device authentication and class of service settings for the primary codec (the device with sequence number 1); the RealPresence DMA system automatically propagates any changes to the other devices in the ITP system.

Note: ITP Systems and Bit Rates

The RealPresence DMA system’s ability to recognize ITP calls and treat them as one assures the same class of service and device authentication settings for all the endpoints in the ITP system, but not other registration settings. It’s up to you to ensure that the maximum and minimum bit rates and other registration settings are consistent.

Note: ITP Systems and CDRs

For ITP systems using SIP or TIP signaling (but not H.323), the RealPresence DMA system also creates a single CDR for calls from the ITP system rather than separate CDRs for each of the three devices. See Call Record Layouts on page 400.

Follow this naming convention for both the HDX system name and the name for each HDX endpoint in the ITP system. For more information, see the following documents:

- *Administrator’s Guide for Polycom HDX Systems*
- *Polycom Immersive Telepresence (ITP) Deployment Guide*
- *Polycom Multipoint Layout Application (MLA) User’s Guide for Use with Polycom Telepresence Solutions*

See also:

Device Management on page 87
Add Endpoint Dialog Box on page 96
Edit Device Dialog Box on page 97
Associate User Dialog Box on page 99
Active Calls on page 87

Add Endpoint Dialog Box

The **Add Endpoint** dialog box lets you manually add a device to the system.

When you add an endpoint manually, the system applies its registration policy script (see Registration Policy on page 264) to determine the device's compliance level (compliant or noncompliant with the policy), and then applies the admission policy associated with that result to determine the registration status of the device.

The following table describes the parts of the dialog box.

Field	Description
Device type	The device's signaling protocol (H.323 or SIP).
Signaling address	For an H.323 device, the H.225 call signaling address and port of the device. Either this or the RAS address is required.
RAS address	For an H.323 device, the RAS (Registration, Admission and Status) channel address and port of the device.
Aliases	For an H.323 device, lists the device's aliases. When you're adding a device, this list is empty. The **Add** button lets you add an alias.
Address of record	For a SIP device, the AOR with which the device registers (see registration rules in RFC 3261), such as: sip:1000@westminster.polycom.com
Device authentication	Indicates whether the endpoint must authenticate itself. **Note:** Inbound authentication for the device type must be enabled at the system level (see Device Authentication on page 261), or the setting for the device has no effect.
Class of service	Select to specify the class of service and the bit rate limits for calls to and from this device. A call between two devices receives the higher class of service of the two. **Note:** When a device calls a conference room (VMR), the class of service of the conference room applies to the call, not the class of service of the device.
Maximum bit rate (kbps)	The maximum bit rate for calls to and from this device.
Minimum downspeed bit rate (kbps)	The minimum bit rate to which calls from this device can be downspeeded to manage bandwidth. If this minimum isn't available, the call is dropped.
Model	Optional model number/name for the device.
Version	Optional version information for the device.

See also:

Endpoints on page 91
Add Alias Dialog Box on page 99
Edit Alias Dialog Box on page 99

Edit Device Dialog Box

The **Edit Device** dialog box lets you change a device's class of service settings, add aliases, and edit or delete added aliases. You can't edit or delete aliases with which the device registered.

The following table describes the parts of the dialog box.

Field	Description
Device type	The device's signaling protocol (H.323 or SIP).
Signaling address	For an H.323 device, the H.225 call signaling address and port of the device. Either this or the RAS address is required.
RAS address	For an H.323 device, the RAS (Registration, Admission and Status) channel address and port of the device.
Aliases	For an H.323 device, lists the device's aliases. When you're adding a device, this list is empty. The **Add** button lets you add an alias.
Site	The site to which the device belongs. Display only.
Owner domain	The domain to which the device's owner belongs, if provided by the device. Display only.
Owner	The user who owns the device, if provided by the device. Display only.
Registration status	The registration status of the device. Display only.
Permanent	Prevents the registration from ever expiring.
Device authentication	Indicates whether the endpoint must authenticate itself. **Note:** Inbound authentication for the device type must be enabled at the system level (see Device Authentication on page 261), or the setting for the device has no effect.
Class of service	Select to modify the class of service and the bit rate limits for calls to and from this device. A call between two devices receives the higher class of service of the two. **Note:** When a device calls a conference room (VMR), the class of service of the conference room applies to the call, not the class of service of the device.
Maximum bit rate (kbps)	The maximum bit rate for calls to and from this device.
Minimum downspeed bit rate (kbps)	The minimum bit rate to which calls from this device can be downspeeded to manage bandwidth. If this minimum isn't available, the call is dropped.

Field	Description
Forward if no answer	If the device doesn't answer, forward calls to the specified alias. Registered endpoints can activate this feature by dialing the vertical service code (VSC) for it (default is *73) followed by the alias. They can deactivate it by dialing the VSC alone.
Forward if busy	If the device is busy, forward calls to the specified alias. Registered endpoints can activate this feature by dialing the VSC for it (default is *74) followed by the alias. They can deactivate it by dialing the VSC alone.
Forward unconditionally	Forward all calls to the specified alias. Registered endpoints can activate this feature by dialing the VSC for it (default is *75) followed by the alias. They can deactivate it by dialing the VSC alone.
Alert when endpoint unregisters	If the device unregisters from the Call Server or its registration expires, an informational alert is triggered (see Alert 5003 on page 365).

See also:

Endpoints on page 91

Add Alias Dialog Box on page 99

Edit Alias Dialog Box on page 99

Edit Devices Dialog Box

The **Edit Devices** dialog box appears when you select multiple devices on the **Endpoints** page and click **Edit Devices**. It lets you change certain settings for multiple devices at a time.

The following table describes the parts of the dialog box.

Field	Description
Device authentication	Indicates whether the selected devices must authenticate themselves. **Note:** Inbound authentication for the device type must be enabled at the system level (see Device Authentication on page 261), or the setting for these devices has no effect.
Permanent	Prevents the registration of the selected devices from ever expiring.
Class of service	Select to modify the class of service and the bit rate limits for calls to and from the selected devices. A call between two devices receives the higher class of service of the two. **Note:** When a device calls a conference room (VMR), the class of service of the conference room applies to the call, not the class of service of the device.
Maximum bit rate (kbps)	The maximum bit rate for calls to and from the selected devices.
Minimum downspeed bit rate (kbps)	The minimum bit rate to which calls from the selected devices can be downspeeded to manage bandwidth. If this minimum isn't available, the call is dropped.
Alert when endpoint unregisters	If one of the selected devices unregisters from the Call Server or its registration expires, an informational alert is triggered (see Alert 5003 on page 365).

See also:

Endpoints on page 91

Edit Device Dialog Box on page 97

Add Alias Dialog Box

The **Add Alias** dialog box lets you specify an alias for the H.323 device you're adding or editing. Enter the alias in the **Value** box and click **OK**.

See also:

Endpoints on page 91

Add Endpoint Dialog Box on page 96

Edit Device Dialog Box on page 97

Edit Alias Dialog Box

The **Edit Alias** dialog box lets you change the selected alias for the H.323 device you're editing. You can't edit aliases with which the device registered, only those that have been added. Edit the alias in the **Value** box and click **OK**.

See also:

Endpoints on page 91

Edit Device Dialog Box on page 97

Associate User Dialog Box

Note: Resource Management Integration and User-to-Device Association

If the Polycom RealPresence DMA system is integrated with a Polycom RealPresence Resource Manager or CMA system, it receives user-to-device association information from that system, and you can only associate users with devices on the Polycom RealPresence Resource Manager or CMA system.

The **Associate User** dialog box lets you associate the selected device with a user. Use the search fields at the top to find the user you want to associate with this device.

You can search by user ID, first name, or last name. The **Search users** field searches all three for matches. The system matches the string you enter against the beginning of the field you're searching. For instance, if you enter "sa" in the **Last name** field, it displays users whose last names begin with "sa." To search for a string not at the beginning of the field, you can use an asterisk (*) as a wildcard.

When you find the right user, select that row and click **OK**. A prompt asks you to confirm associating the endpoint with this user.

See also:

Endpoints on page 91

Site Statistics

The **Site Statistics** page lists the sites defined in the Polycom RealPresence DMA system's site topology and, for those controlled by the system, traffic and QoS statistics. Network clouds and the default internet site aren't included.

The following table describes the fields in the list.

Column	Description
Site Name	Name of the site.
Number of Calls	Number of active calls.
Bandwidth Used %	Percentage of available bandwidth in use.
Bandwidth (Mbps)	Total available bandwidth.
Avg Bit Rate (kbps)	Average bit rate of the active calls. **Note:** Bit rate is not the same as bandwidth. Since the bit rate applies in both directions and there is overhead, the actual bandwidth consumed is about 2.5 times the bit rate.
Packet Loss %	Average packet loss percentage of the active calls.
Avg Jitter (msec)	Average jitter rate of the active calls.
Avg Delay (msec)	Average delay rate of the active calls.
Territory	Territory to which the site belongs.
Cluster	Cluster responsible for the territory to which the site belongs.

See also:

Device Management on page 87

Sites on page 279

Site Link Statistics

The **Site Link Statistics** page lists the site links defined in the Polycom RealPresence DMA system's site topology and, for those controlled by the system, traffic and QoS statistics.

The following table describes the fields in the list.

Column	Description
Site Link Name	Name of the site link.
Number of Calls	Number of active calls.
Bandwidth Used %	Percentage of available bandwidth in use.
Bandwidth (Mbps)	Total available bandwidth.

Column	Description
Avg Bit Rate (kbps)	Average bit rate of the active calls. **Note:** Bit rate is not the same as bandwidth. Since the bit rate applies in both directions and there is overhead, the actual bandwidth consumed is about 2.5 times the bit rate.
Packet Loss %	Average packet loss percentage of the active calls.
Avg Jitter (msec)	Average jitter rate of the active calls.
Avg Delay (msec)	Average delay rate of the active calls.
Territory	Territory to which the site belongs.
Cluster	Cluster responsible for the territory to which the site belongs.

See also:

Device Management on page 87

Site Links on page 291

External Gatekeeper

On the **External Gatekeeper** page, you can add or remove neighbor gatekeepers. This is a supercluster-wide configuration.

When an enterprise has multiple neighbored gatekeepers, each gatekeeper manages its own H.323 zone. When a call originates in one gatekeeper zone and that zone's gatekeeper is unable to resolve the dialed address, it forwards the call to the appropriate neighbor gatekeeper(s) for resolution.

But note that a Polycom RealPresence DMA supercluster can manage multiple locations as a single H.323 zone, with the clusters acting as a single virtual gatekeeper. This allows the gatekeeper function to be geographically distributed, but managed centrally. A Polycom RealPresence DMA supercluster may eliminate the need for multiple zones and neighbor gatekeepers.

Note: External Gatekeeper Considerations

When adding a neighbor gatekeeper, you can only specify one IP address. In an IPv4 + IPv6 environment, to add a neighbor gatekeeper that has both an IPv4 and an IPv6 address, do the following:

- Add the neighbor gatekeeper using its IPv4 address.
- Add it a second time using its IPv6 address.
- Add one **Resolve to external gatekeeper** dial rule (see Add Dial Rule Dialog Box on page 244) that specifies the neighbor gatekeeper's IPv4 address entry (and no other gatekeepers).
- Add another **Resolve to external gatekeeper** dial rule that specifies the neighbor gatekeeper's IPv6 address entry (and no other gatekeepers).

Requests from endpoints with IPv4 addresses will be forwarded to the gatekeeper's IPv4 address, and requests from endpoints with IPv6 addresses will be forwarded to the gatekeeper's IPv6 address.

The following table describes the fields in the list.

Column	Description
Name	The name of the neighbored gatekeeper.
Description	Brief description of the gatekeeper.
Address	Host name or IP address of the gatekeeper.
Prefix Range	The dial string prefix(es) assigned to this neighbor gatekeeper. If your dial plan uses the *Dial services by prefix* dial rule (in the default dial plan) to route calls to services, all dial strings beginning with an assigned prefix are forwarded to this gatekeeper for resolution.
Enabled	Indicates whether the system is using the neighbor gatekeeper.

See also:

Device Management on page 87

Edit External Gatekeeper Dialog Box on page 103

Add External Gatekeeper Dialog Box

The following table describes the fields in the **Add External Gatekeeper** dialog box.

Column	Description
External Gatekeeper	
Enabled	Clearing this check box lets you stop using an external gatekeeper without deleting it.
Name	Gatekeeper name.
Description	The text description displayed in the **External Gatekeepers** list.
Address	Host name or IP address of the gatekeeper.
RAS port	The RAS (Registration, Admission and Status) channel port number. Leave set to 1719 unless you know the gatekeeper is using a non-standard port number.
Prefix range	The dial string prefix or prefix range for which the external gatekeeper is responsible. Enter a single prefix (44), a range of prefixes (44-47), multiple prefixes separated by commas (44,46), or a combination (41, 44-47, 49). If your dial plan uses the *Dial services by prefix* dial rule (in the default dial plan) to route calls to services, all dial strings beginning with an assigned prefix are forwarded to this gatekeeper for resolution. If your dial plan instead uses a rule that you create to apply the **Resolve to external gatekeeper** action, there is no need to specify a prefix.
Strip prefix	If selected, the system strips the prefix when a call that includes a prefix is routed to this gatekeeper.

Column	Description
Prefer routed	If selected (the default), the system forces all calls to this gatekeeper to routed mode. This setting must be enabled to avoid interoperability issues with Polycom CMA and Avaya gatekeepers, and possibly others as well.
Authentication Mode	In this section, you can configure the system to send its H.235 credentials when it sends address resolution requests to that gatekeeper.
Enabled	Clearing this check box lets you stop sending H.235 credentials to the external gatekeeper without deleting them.
Name	The H.235 name of the Polycom RealPresence DMA system.
Password Confirm password	The H.235 password for the Polycom RealPresence DMA system.
Algorithm	Select the encryption algorithm for H.235 authentication.
LRQ test	Click to test the configuration by sending an LRQ message to the external gatekeeper.
Postliminary	A postliminary is an executable script, written in the Javascript language, that defines dial string transformations to be applied before querying the external gatekeeper.
Enabled	Lets you turn a postliminary on or off without deleting it.
Script	Type (or paste) the postliminary script you want to apply. Then click **Debug this script** to open the Script Debugging Dialog Box for Preliminaries/Postliminaries and test the script with various variables.

See also:

External Gatekeeper on page 101
Script Debugging Dialog Box for Preliminaries/Postliminaries on page 254
Device Authentication on page 261

Edit External Gatekeeper Dialog Box

The following table describes the fields in the **Edit External Gatekeeper** dialog box.

Column	Description
External Gatekeeper	
Enabled	Clearing this check box lets you stop using an external gatekeeper without deleting it.
Name	Gatekeeper name.
Description	The text description displayed in the **External Gatekeepers** list.
Address	Host name or IP address of the gatekeeper.

Column	Description
RAS port	The RAS (Registration, Admission and Status) channel port number. Leave set to 1719 unless you know the gatekeeper is using a non-standard port number.
Prefix range	The dial string prefix or prefix range for which the external gatekeeper is responsible. Enter a single prefix (44), a range of prefixes (44-47), multiple prefixes separated by commas (44,46), or a combination (41, 44-47, 49). If your dial plan uses the *Dial services by prefix* dial rule (in the default dial plan) to route calls to services, all dial strings beginning with an assigned prefix are forwarded to this gatekeeper for resolution. If your dial plan instead uses a rule that you create to apply the **Resolve to external gatekeeper** action, there is no need to specify a prefix.
Strip prefix	If selected, the system strips the prefix when a call that includes a prefix is routed to this gatekeeper.
Prefer routed	If selected (the default), the system forces all calls to this gatekeeper to routed mode. This setting must be enabled to avoid interoperability issues with Polycom CMA and Avaya gatekeepers, and possibly others as well.
Authentication Mode	In this section, you can configure the system to send its H.235 credentials when it sends address resolution requests to that gatekeeper.
Enabled	Clearing this check box lets you stop sending H.235 credentials to the external gatekeeper without deleting them.
Name	The H.235 name of the Polycom RealPresence DMA system.
Password Confirm password	The H.235 password for the Polycom RealPresence DMA system.
Algorithm	Select the encryption algorithm for H.235 authentication.
LRQ test	Click to test the configuration by sending an LRQ message to the external gatekeeper.
Postliminary	A postliminary is an executable script, written in the Javascript language, that defines dial string transformations to be applied before querying the external gatekeeper.
Enabled	Lets you turn a postliminary on or off without deleting it.
Script	Type (or paste) the postliminary script you want to apply. Then click **Debug this script** to open the Script Debugging Dialog Box for Preliminaries/Postliminaries and test the script with various variables.

See also:

External Gatekeeper on page 101

Script Debugging Dialog Box for Preliminaries/Postliminaries on page 254

Device Authentication on page 261

External SIP Peer

On the **External SIP Peer** page, you can add or remove SIP servers or devices from the list of SIP peers to which the system can route calls and from which it may receive calls.

This is a supercluster-wide configuration. But note that a Polycom RealPresence DMA system supercluster can provide proxy service for any or all domains in the enterprise, allowing the SIP function to be distributed, but managed centrally. This may reduce the need for external SIP peer servers (other than SIP session border controllers, or SBCs).

Note: SBC Configuration

SIP SBCs to be reached by prefix-based dialing (rule 4 of the default dial plan; see The Default Dial Plan and Suggestions for Modifications on page 241) are added to the **External SIP Peer** page.

SBCs to be reached by a dial rule using the **Resolve to external address** or **Resolve to IP address** action (rules 5 and 6, respectively, of the default dial plan) are configured on a per-site basis (see Edit Site Dialog Box on page 285).

For most configurations, SBCs should be configured on a per-site basis, so that calls to endpoints outside the enterprise network are routed to the SBC for the originating site.

The following table describes the fields in the list.

Column	Description
Name	The name of the SIP peer.
Description	Brief description of the SIP peer.
Next Hop Address	Fully qualified domain name (FQDN) or IP address of the SIP peer
Prefix Range	The dial string prefix(es) assigned to this SIP peer. If your dial plan uses the *Dial services by prefix* dial rule (in the default dial plan) to route calls to services, all dial strings beginning with an assigned prefix are forwarded to this SIP peer for resolution.
Enabled	Indicates whether the system is using the SIP peer.
Outbound	Indicates whether the system is registered with the SIP peer so that it can route calls to it.

See also:

Device Management on page 87

Edit External SIP Peer Dialog Box on page 110

Add External SIP Peer Dialog Box

The following table describes the fields in the **Add External SIP Peer** dialog box.

Field	Description
External SIP Peer	
Enabled	Clearing this check box lets you stop using an external SIP peer without deleting it.
Name	Peer name or number. Must be unique among SIP peers.
Description	The text description displayed in the **External SIP Peer** list.
Type	For a Microsoft Office Communications Server, Lync Server 2010, or Lync Server 2013, select **Microsoft**. Otherwise, select **Other**. Selecting **Microsoft** implicitly adds the **Destination network** value to the **Domain List** (if not already there) and automatically selects the **Postliminary** settings that are correct for most deployments in Microsoft environments, but you can modify them if necessary. **Note**: Selecting **Microsoft** enables the **Lync Integration** tab.
Next hop address	Fully qualified domain name (FQDN), host name, or IP address of the SIP peer. If you specify a domain/host name, the system routes calls to this peer by using DNS to resolve the address. The DNS server that the system uses must contain the required records (NAPTR, SRV, and/or A/AAAA). **Note**: If you are configuring a Lync 2013 SIP Peer, the **Next hop address** should be the FQDN or IP address of the Lync Pool, not an individual Lync server within a pool.
Destination network	Host name, FQDN, or network domain label of the SIP peer, with or without port and URL parameters. If specified, this value by default replaces the non-user portion of a URL (after the @ symbol) of the To header and Request-URI for forwarded messages, and just the Request-URI for REGISTER messages. If **Type** is set to Microsoft, this field is required, is used for the peer's domain, and is implicitly added to the **Domain List** (if not already there).
Port	The SIP signaling port number. Defaults to the standard UDP/TCP port, 5060. If the peer server is using a different port number, specify it. **Note**: For a Microsoft Lync 2013 SIP peer, the port should be 5061. If left blank, the system uses the full RFC 3263 procedure to determine the port via DNS.
Transport type	The transport protocol to use when contacting this SIP peer. The default is **UDP**. **Auto detect** tells the system to select the protocol using DNS as specified in RFC 3263, and is not valid if **Next hop address** is a numeric IP address instead of a host/domain name.
Use route header	Add a Route header with the peer's **Next hop address** value to the message. Applies to both forwarded messages and external REGISTER messages. If not selected, the only valid Request-URI configurations are those that use the peer's **Next hop address** value for the URI host.

Field	Description
Downgrade	If selected, and if this peer doesn't support TLS, the system can change the Request-URI schema from sips to sip and route the call to this peer. If not selected, the system routes a TLS call to this peer only if this peer supports TLS.
Prefix range	The dial string prefix(es) assigned to this SIP peer. Enter a single prefix (44), a range of prefixes (44-47), or multiple prefixes separated by commas (44,46) If your dial plan uses the *Dial services by prefix* dial rule (in the default dial plan) to route calls to services, all dial strings beginning with an assigned prefix are forwarded to this SIP peer for resolution. If your dial plan instead uses a rule that you create to apply the *Resolve to external SIP peer* action, there is no need to specify a prefix. Otherwise, the system applies the **SIP Routing** settings of the originating site (see Sites on page 279 and Edit Site Dialog Box on page 285) for calls to endpoints outside the enterprise network. **Note:** For a SIP peer, the dial string must either include the protocol or consist of only the prefix and user name (no @domain). For instance, if the SIP peer's prefix is 123, the dial string for a call to alice@polycom.com must be one of the following: sip:123alice@polycom.com sips:123alice@polycom.com 123alice
Strip prefix	If selected, the system strips the prefix when a call that includes a prefix is routed to this peer.
Register externally	Some external SIP peers require peers to register with them as an endpoint does, using a REGISTER message (also referred to as *pilot registration*). Select this option to enable the **External Registration** tab and configure the system to register with this external SIP peer, following the rules specified in RFC 3261.
Domain List	If your dial plan uses a rule to apply the *Resolve to external SIP peer* action, you can restrict calls to this SIP peer to specific domains by adding the authorized domains to this list. If this list is empty, all domains can resolve to this peer. **Note:** In some circumstances (depending on network topology and configuration), dialing loops can develop if you don't restrict SIP peers to specific domains.
Add new domain	Enter a domain and click **Add** to add it to the list of authorized domains.
Authorized domains	List of administrative domains, contained in the dial string, for which calls are routed to this SIP peer. Leave this list empty to route any call that matches the rule to this SIP peer. Select a domain and click **Remove** to remove it from the list.

Field	Description
Postliminary	
Use output format	Enables dial string transformations using the To header and Request-URI option settings below instead of a customized script. **Note:** The system generates a script that implements the settings made in this section. To see (and perhaps copy) the generated script, you can temporarily select **Use customized script**. To help you learn how to write your own script, you can make different settings in this section and see how the generated script changes.
To header options	Specify the format of the To header in messages sent to this peer.
Copy all parameters of original “To” headers	Copies any parameters included in the original To header to the To header sent to this peer. This setting applies to all format options.
Format Template	Select a predefined format from the list, or select **Free Form Template** and define the format in the associated **Template** field. The predefined formats in the list and the variables you use in the **Template** field are described in SIP Peer Postliminary Output Format Options on page 114.
Request URI options	Specify the format of the Request-URI.
Format Template	Select a predefined format from the list, or select **Free Form Template** and define the format in the associated **Template** field. The predefined formats in the list and the variables you use in the **Template** field are described in SIP Peer Postliminary Output Format Options on page 114.
Use customized script	Enables an executable script, written in the Javascript language, in the text box below. Writing such a script enables you to more flexibly define dial string and message format transformations to be applied. Type (or paste) the postliminary script you want to apply. Then click **Debug this script** to open the Script Debugging Dialog Box for Preliminaries/Postliminaries and test the script with various variables. **Note:** When you make settings in the **Use output format** section, the system generates a script that implements those settings. Select this option to see (and perhaps copy) the generated script.
Authentication	On this tab, you can configure SIP digest authentication, as specified in RFC 3261, for this SIP peer and add or edit authentication credentials. SIP authentication must be enabled and configured on the Device Authentication page. **Note:** The digest authentication settings for this peer are used only in conjunction with a dial rule specifying the *Resolve to external SIP peer* action. If another dial rule action, such as *Resolve to external address*, is applied to the call, there is no association to this peer and its authentication settings aren’t used.

Field	Description
Authentication	Select one: • Handle authentication — When it receives a 401 (Unauthorized) response from this SIP peer, the Call Server presents its authentication credentials. • Pass authentication — When it receives a 401 response from this SIP peer, the Call Server passes it to the source of the request. **Note:** SIP authentication requests are never passed to an H.323 endpoint (a gateway call). If the Call Server can't provide the required credentials, the call fails.
Proxy authentication	Select one: • Handle proxy authentication — When it receives a 407 (Proxy Authentication Required) response from this SIP peer, the Call Server presents its authentication credentials. • Pass proxy authentication — When it receives a 407 response from this SIP peer, the Call Server passes it to the source of the request. **Note:** Authentication requests are never passed to an H.323 endpoint (a gateway call). If the Call Server can't provide the required credentials, the call fails.
(table of authentication entries)	Lists the authentication credential entries defined for use with this SIP peer, showing the realm in which the entry is valid and the user name. Click **Add** to add authentication credentials. When choosing authentication credentials to present to this SIP peer, the Call Server looks first at the entries listed here. If there is none with the correct realm, it looks for an appropriate entry on the Device Authentication page.
Lync Integration	This tab contains fields necessary to integrate with a Lync 2013 server, and is enabled when you select a **Type** of **Microsoft** on the **External SIP Peers** tab.
Maximum Polycom conference contacts to publish	The maximum number of Polycom conference contacts that the RealPresence DMA system will attempt to publish to this SIP peer. **Note**: If this field is set to the default value of 0, **Lync pool to create/publish to** on the **Admin > Conference Manager > Conference Settings** page will be blank. The maximum Polycom conference contacts to publish is 25,000.
Enable combined RealPresence-Lync scheduled conferences	Indicates whether or not this Lync SIP peer should be cascaded with Polycom MCUs for scheduled conferences. If enabled, this Lync SIP peer will be used to resolve Lync conference IDs.
Lync account URI	The account ID the RealPresence DMA system should use when resolving Lync conference IDs. Any user account on the Lync server can be used. This field is enabled when **Enable combined RealPresence-Lync scheduled conferences** is checked.
External Registration	Lists any outbound registration configurations associated with this SIP peer and lets you add, edit, or delete registrations. Multiple registrations may be associated with a SIP peer.

See also:

External SIP Peer on page 105
SIP Peer Postliminary Output Format Options on page 114
Device Authentication on page 261
Add Authentication Dialog Box on page 117
Edit Authentication Dialog Box on page 118
Add Outbound Registration Dialog Box on page 118
Edit Outbound Registration Dialog Box on page 119
Script Debugging Dialog Box for Preliminaries/Postliminaries on page 254

Edit External SIP Peer Dialog Box

The following table describes the fields in the **Edit External SIP Peer** dialog box.

Field	Description
External SIP Peer	
Enabled	Clearing this check box lets you stop using an external SIP peer server without deleting it.
Name	Peer server name or number. Must be unique among SIP peers.
Description	The text description displayed in the **External SIP Peer** list.
Type	For a Microsoft Office Communications Server, Lync Server 2010, or Lync Server 2013, select **Microsoft**. Otherwise, select **Other**. Selecting **Microsoft** implicitly adds the **Destination network** value to the **Domain List** (if not already there) and automatically selects the **Postliminary** settings that are correct for most deployments in Microsoft environments, but you can modify them if necessary.
Next hop address	Fully qualified domain name (FQDN), host name, or IP address of the peer server. If you specify a domain/host name, the system routes calls to this peer by using DNS to resolve the address. The DNS server that the system uses must contain the required records (NAPTR, SRV, and/or A/AAAA). Note: If you are configuring a Lync 2013 SIP Peer, the **Next hop address** should be the FQDN or IP address of the Lync Pool, not an individual Lync server within a pool.
Destination network	Host name, FQDN, or network domain label of the peer server, with or without port and URL parameters. If specified, this value by default replaces the non-user portion of a URL (after the @ symbol) of the To header and Request-URI for forwarded messages, and just the Request-URI for REGISTER messages. If **Type** is set to Microsoft, this field is required, is used for the peer's domain, and is implicitly added to the **Domain List** (if not already there).

Field	Description
Port	The SIP signaling port number. Defaults to the standard UDP/TCP port, 5060. If the peer server is using a different port number, specify it. **Note**: For a Microsoft Lync 2013 SIP peer, the port should be 5061. If left blank, the system uses the full RFC 3263 procedure to determine the port via DNS.
Transport type	The transport protocol to use when contacting this peer server. The default is **UDP**. **Auto detect** tells the system to select the protocol as specified in RFC 3263, and is not valid if **Next hop address** is a numeric IP address instead of a host/domain name.
Use route header	Add a Route header with the peer's **Next hop address** value to the message. Applies to both forwarded messages and external REGISTER messages. If not selected, the only valid Request-URI configurations are those that use the peer's **Next hop address** value for the URI host.
Downgrade	If selected, and if this peer doesn't support TLS, the system can change the Request-URI schema from sips to sip and route the call to this peer. If not selected, the system routes a TLS call to this peer only if this peer supports TLS.
Prefix range	The dial string prefix(es) assigned to this SIP peer. Enter a single prefix (44), a range of prefixes (44-47), or multiple prefixes separated by commas (44,46) If your dial plan uses the *Dial services by prefix* dial rule (in the default dial plan) to route calls to services, all dial strings beginning with an assigned prefix are forwarded to this SIP peer for resolution. If your dial plan instead uses a rule that you create to apply the **Resolve to external SIP peer** action, there is no need to specify a prefix. Otherwise, the system applies the **SIP Routing** settings of the originating site (see Sites on page 279 and Edit Site Dialog Box on page 285) for calls to endpoints outside the enterprise network. **Note:** For a SIP peer, the dial string must either include the protocol or consist of only the prefix and user name (no @domain). For instance, if the SIP peer's prefix is 123, the dial string for a call to alice@polycom.com must be one of the following: sip:123alice@polycom.com sips:123alice@polycom.com 123alice
Strip prefix	If selected, the system strips the prefix when a call that includes a prefix is routed to this peer.
Register externally	Some external SIP peers require peers to register with them as an endpoint does, using a REGISTER message. Select this option to enable the **External Registration** tab and configure the system to register with this external peer server, following the rules specified in RFC 3261.

Field	Description
Domain List	If your dial plan uses a rule to apply the *Resolve to external SIP peer* action, you can restrict calls to this peer server to specific domains by adding the authorized domains to this list. If this list is empty, all domains can resolve to this peer. **Note:** In some circumstances (depending on network topology and configuration), dialing loops can develop if you don't restrict peer servers to specific domains.
Add new domain	Enter a domain and click **Add** to add it to the list of authorized domains.
Authorized domains	List of administrative domains, contained in the dial string, for which calls are routed to this peer server. Leave this list empty to route any call that matches the rule to this peer server. Select a domain and click **Remove** to remove it from the list.
Postliminary	
Use output format	Enables dial string transformations using the To header and Request-URI option settings below instead of a customized script. **Note:** The system generates a script that implements the settings made in this section. To see (and perhaps copy) the generated script, you can temporarily select **Use customized script**. To help you learn how to write your own script, you can make different settings in this section and see how the generated script changes.
To header options	Specify the format of the To header in messages sent to this peer.
Copy all parameters of original “To” headers	Copies any parameters included in the original To header to the To header sent to this peer. This setting applies to all format options.
Format Template	Select a predefined format from the list, or select **Free Form Template** and define the format in the associated **Template** field. The predefined formats in the list and the variables you use in the **Template** field are described in SIP Peer Postliminary Output Format Options on page 114.
Request URI options	Specify the format of the Request-URI.
Format Template	Select a predefined format from the list, or select **Free Form Template** and define the format in the associated **Template** field. The predefined formats in the list and the variables you use in the **Template** field are described in SIP Peer Postliminary Output Format Options on page 114.
Use customized script	Enables an executable script, written in the Javascript language, in the text box below. Writing such a script enables you to more flexibly define dial string and message format transformations to be applied. Type (or paste) the postliminary script you want to apply. Then click **Debug this script** to open the Script Debugging Dialog Box for Preliminaries/Postliminaries and test the script with various variables. **Note:** When you make settings in the **Use output format** section, the system generates a script that implements those settings. Select this option to see (and perhaps copy) the generated script.

Field	Description
Authentication	On this tab, you can configure SIP digest authentication, as specified in RFC 3261, for this SIP peer and add or edit authentication credentials. SIP authentication must be enabled and configured on the Device Authentication page. **Note:** The digest authentication settings for this peer are used only in conjunction with a dial rule specifying the *Resolve to external SIP peer* action. If another dial rule action, such as *Resolve to external address*, is applied to the call, there is no association to this peer and its authentication settings aren't used.
Authentication	Select one: • Handle authentication — When it receives a 401 (Unauthorized) response from this SIP peer, the Call Server presents its authentication credentials. • Pass authentication — When it receives a 401 response from this SIP peer, the Call Server passes it to the source of the request. **Note:** SIP authentication requests are never passed to an H.323 endpoint (a gateway call). If the Call Server can't provide the required credentials, the call fails.
Proxy authentication	Select one: • Handle proxy authentication — When it receives a 407 (Proxy Authentication Required) response from this SIP peer, the Call Server presents its authentication credentials. • Pass proxy authentication — When it receives a 407 response from this SIP peer, the Call Server passes it to the source of the request.
(table of authentication entries)	Lists the authentication credential entries defined for use with this SIP peer, showing the realm in which the entry is valid and the user name. Click **Add** to add authentication credentials. When choosing authentication credentials to present to this SIP peer, the Call Server looks first at the entries listed here. If there is none with the correct realm, it looks for an appropriate entry on the Device Authentication page.
Lync Integration	This tab contains fields necessary to integrate with a Lync 2013 server.
Maximum Polycom conference contacts to publish	The maximum number of Polycom conference contacts that the RealPresence DMA system will attempt to publish to this SIP peer. **Note**: If this field is set to the default value of 0, **Lync pool to create/publish to** on the **Admin > Conference Manager > Conference Settings** page will be blank. The maximum Polycom conference contacts to publish is 25,000.
Enable combined RealPresence-Lync scheduled conferences	Indicates whether or not this Lync SIP peer should be cascaded with Polycom MCUs for scheduled conferences. If enabled, this Lync SIP peer will be used to resolve Lync conference IDs.

Field	Description
Lync account URI	Account ID the RealPresence DMA system should use when resolving Lync conference IDs. This field is enabled when **Enable combined RealPresence-Lync scheduled conferences** is checked.
External Registration	Lists any outbound registration configurations associated with this SIP peer and lets you add, edit, or delete registrations. Multiple registrations may be associated with a SIP peer.

See also:

External SIP Peer on page 105
Device Authentication on page 261
Add Authentication Dialog Box on page 117
Edit Authentication Dialog Box on page 118
Add Outbound Registration Dialog Box on page 118
Edit Outbound Registration Dialog Box on page 119
Script Debugging Dialog Box for Preliminaries/Postliminaries on page 254

SIP Peer Postliminary Output Format Options

This section includes the following information to help with the postliminary settings for an external SIP peer:

- To Header Format Options
- Request-URI Header Format Options
- Free Form Template Variables
- To Header and Request-URI Header Examples

To Header Format Options

The settings available on the **Format** list for the To header are described below. If a user is present in the URI, the user is always preserved except when **Free Form Template** is selected.

Use original request's To — The To header from the original request is copied and used as is. Equivalent to template:

```
"#otdisplay#" <#otscheme#:#otuser#@#othost#>
```

No Display, use original request's To — The To header from the original request is copied and used. If a display parameter is present, it's removed. Equivalent to template:

```
<#otscheme#:#otuser#@#othost>
```

With Display, use peer's next hop address as host — URI's host is replaced with the **Next hop address** value for this peer. No other changes are made. Equivalent to template:

```
"#otdisplay#" <#pscheme#:#otuser#@#phost#>
```

No Display, use original request's URL host — The To header from the original request is copied, the URI is replaced with the host/IP portion of the original request's Request-URI. If a display parameter is present, it's removed. Equivalent to template:

`<#pscheme#:#otuser#@#orhost#>`

No Display, use peer's Destination Network or next hop address — Uses the **Destination network** value if specified, otherwise the peer's **Next hop address** value. If a display parameter is present, it's removed. Equivalent to template:

`<#pscheme#:#otuser#@#pnetORphost#>`

Default To header for Microsoft. — Equivalent to template:

`"#otdisplay#" <sip:#otuser#@#pnetORphost#>`

Free Form Template — Format defined in associated **Template** field is used without further modification. See Free Form Template Variables on page 116 and To Header and Request-URI Header Examples on page 117.

Request-URI Header Format Options

The settings available on the **Format** list for the Request-URI header are described below (RR= requires route header):

Use original request's URI (RR) — The original request's URI is copied and moved. Equivalent to template:

`#orscheme#:#oruser#@#orhost#`

No user, original request's host (RR) — The user in the original, if any, is removed, but the original host is used. Equivalent to template:

`#orscheme#:#orhost#`

No user, configured peer's next hop address as host — The user in the original, if any, is removed, and the host is replaced with the **Next hop address** value for this peer. Equivalent to template:

`#pscheme#:#phost#`

Original user, configured peer's next hop address as host — The user in the original is copied, but the host is replaced with the **Next hop address** value for this peer. Equivalent to template:

`#pscheme#:#oruser#@#phost#`

Note: SIP Peers and TLS

If the peer's transport type is configured as TLS, this setting makes the Request-URI scheme `sips` even if the original Request-URI's scheme was `sip`. Some SIP peers, such as the Cisco SBC, won't accept `sips` in the Request-URI if other headers contain `sip`. If this problem exists, change **Format** to **Free Form Template** and in the **Template** field, change `#pscheme#` to `#orscheme#`.

Use user as host (RR) — Uses the user in the original, if specified, as the host value, otherwise the host value is used as is. Equivalent to template:

`#orscheme#:#oruser#`
(but if no original user is present, the host value is used as is)

No user, configured peer's Destination Network or next hop address — Uses the **Destination network** value if specified, otherwise the peer's **Next hop address** value. Equivalent to template:

`#pscheme#:#pnetORphost#`

Original user, configured peer's Destination Network or next hop address — Uses the user in the original, if specified, but replaces the host with the **Destination network** value, if specified, or the peer's **Next hop address** value. Equivalent to template:

```
#pscheme#:#otuser#@#pnetORphost#
```

Default Request-URI for Microsoft. — Equivalent to template:

```
sip:#phost#:#pport#;transport=#ptransport#
```

Free Form Template — Format defined in associated **Template** field is used without further modification. See Free Form Template Variables on page 116 and To Header and Request-URI Header Examples on page 117.

Free Form Template Variables

In the **Template** fields on the **Postliminary** tab, and when specifying a Request-URI or other headers for outbound registration (see Add Outbound Registration Dialog Box on page 118), you can use the variables in the table below entered as `#variable name#` (case insensitive). The system replaces the variables with the corresponding values as shown below.

You can also use these variables (without # delimiters) in a customized script.

Variable	Description
otdisplay	Original To header's display name.
otuser	User portion of the original request's To header URL field.
othost	Host/IP portion of the original request's To header URL field.
otscheme	Original To header's URL scheme (sip, sips, tel).
phost	Peer's configured IP/FQDN (next hop address).
pscheme	Peer's configured scheme based on transport (sip, sips).
oruser	User portion of the original request's Request-URL field.
orhost	Host/IP portion of the original request's Request-URL field.
orscheme	Original request's URL scheme.
pnetORhost	Destination network parameter if specified, otherwise the peer's configured IP/FQDN.
pport	The port specified for this SIP peer.
ptransport	The transport type specified for this SIP peer.

In addition to the variables, you can enter any values acceptable for the Request-URI or To header.

For the Request-URI, the contents of the Template field specify only the URI portion of the full Request line. Depending on network configuration, a Route header may be required.

For the To header, the contents of the Template field specify the complete header except for the header name ("To").

The @ symbol is always removed if no user is present in the result.

To Header and Request-URI Header Examples

The tables below show some examples of To header and Request-URI header transformations using the variables described in Free Form Template Variables on page 116.

Original To Header	Template	Result
sip:user@host	#orscheme#:atest	sip:atest
sip:user@host	#orscheme#:#oruser#@#orhost#	sip:user@host
sip:host	#orscheme#:#oruser#@foo.bar	sip:foo.bar
sip:user@host	#orscheme#:#oruser#@foo.bar	sip:user@foo.bar
sip:host	sips:#oruser#@foo.bar	sips:foo.bar
sip:user@host	#orscheme#:#oruser#@#othost#	sip:user@toHeaderUrlHost

Original Request-URI Header	Template	Result
displayname <sip:user@host>	#otdisplay# <sip:#otuser#@#othost#>	displayname <sip:user@host>
displayname <sip:user@host>	<#otscheme#:#otuser#@#othost#>	<sip:user@host>
displayname <sip:user@host>	<sip:#otuser#@#othost#>	<sip:user@host>
displayname <sip:user@host>	#otdisplay# <sip:#otuser#@#phost#>	displayname <sip:user@peerHostIp>
displayname <sip:user@host>	#otdisplay# <sip:#otuser#@foo.bar>	displayname <sip:user@foo.bar>

See also:

External SIP Peer on page 105
Add External SIP Peer Dialog Box on page 105
Edit External SIP Peer Dialog Box on page 110
Add Outbound Registration Dialog Box on page 118
Edit Outbound Registration Dialog Box on page 119

Add Authentication Dialog Box

The **Add Authentication** dialog box lets you add an authentication credential entry either for a specific external SIP peer (see Edit External SIP Peer Dialog Box on page 110) or to the general list of outbound

authentication credentials that the system uses if challenged by an external device (see Device Authentication on page 261).

The following table describes the fields in the dialog box.

Field	Description
Realm	Unique string that identifies the protection domain to which this set of credentials applies. Generally includes the host or domain name of the SIP peer. See RFC 2617 and RFC 3261.
User name	The user name to use for authentications in this realm.
Password Confirm password	The password to use for authentications in this realm.

See also:

External SIP Peer on page 105

Add External SIP Peer Dialog Box on page 105

Edit External SIP Peer Dialog Box on page 110

Edit Authentication Dialog Box

The **Edit Authentication** dialog box lets you edit an authentication credential entry either for a specific external SIP peer (see Edit External SIP Peer Dialog Box on page 110) or from the general list of outbound credentials for the system (see Device Authentication on page 261).

The following table describes the fields in the **Edit Authentication** dialog box.

Field	Description
Realm	Unique string that identifies the protection domain to which this set of credentials applies. Generally includes the host or domain name of the SIP peer. See RFC 2617 and RFC 3261.
User name	The user name to use for authentications in this realm.
Password Confirm password	The password to use for authentications in this realm.

See also:

External SIP Peer on page 105

Add External SIP Peer Dialog Box on page 105

Edit External SIP Peer Dialog Box on page 110

Add Outbound Registration Dialog Box

Some external SIP peers require peers to register with them as an endpoint does, using a REGISTER message (also known as *pilot registration*). The **Add Outbound Registration** dialog box lets you add outbound registration configurations that the system can use to register with the SIP peer that you're adding or editing, following the rules specified in RFC 3261.

The following table describes the fields in the **Add Outbound Registration** dialog box.

Field	Description
Enabled	Clearing this check box lets you stop using this registration without deleting the registration information.
Address of record	The AOR with which the system registers (see registration rules in RFC 3261), such as: sip:1000@dma.polycom.com
Territory to perform registration	Responsibility for registering must be assigned to a territory, thus making the primary or backup RealPresence DMA cluster for the territory responsible, depending on which is active.
Contact address format	Select **IP** or **DNS** to specify that the contact header should use the virtual IP address or virtual DNS name of the cluster currently managing the territory. If the territory responsibility switches to the other cluster, it re-sends the registration using its IP address or DNS name. Select **Free Form** to specify that the contact header should use the FQDN you enter. The external peer must be able to resolve this FQDN.
User name	The user name to use for the authentication credentials if the external peer challenges the registration request. **Note:** The authentication credentials specified here are specific to this SIP peer and are not tied to any other authentication configuration values.
Password Confirm password	The password to use for the authentication credentials if the external peer challenges the registration request.
Request-URI	The Request-URI to include when registering with this SIP peer, specified using the variables (#delimited) defined in Free Form Template Variables on page 116.
Other headers	Additional headers to include when registering with this SIP peer. Click **Add** to add a header. In the **Add Header** dialog box, specify the header name and value(s), using the variables (#delimited) defined in Free Form Template Variables on page 116. Click **Edit** or **Delete** to edit or delete the selected header.

See also:

External SIP Peer on page 105

Add External SIP Peer Dialog Box on page 105

Edit External SIP Peer Dialog Box on page 110

Edit Outbound Registration Dialog Box

Some external SIP peers require peer proxies to register with them as an endpoint does, using a REGISTER message. The **Edit Outbound Registration** dialog box lets you edit the selected outbound registration configuration.

The following table describes the fields in the **Edit Outbound Registration** dialog box.

Field	Description
Enabled	Clearing this check box lets you stop using this registration without deleting the registration information.
Address of record	The AOR with which the system registers (see registration rules in RFC 3261), such as: sip:1000@dma.polycom.com
Territory to perform registration	Responsibility for registering must be assigned to a territory, thus making the primary or backup RealPresence DMA cluster for the territory responsible, depending on which is active.
Contact address format	Select **IP** or **DNS** to specify that the contact header should use the virtual IP address or virtual DNS name of the cluster currently managing the territory. If the territory responsibility switches to the other cluster, it re-sends the registration using its IP address or DNS name. Select **Free Form** to specify that the contact header should use the FQDN you enter. The external peer must be able to resolve this FQDN.
User name	The user name to use for the authentication credentials if the external peer challenges the registration request. **Note:** The authentication credentials specified here are specific to this SIP peer and are not tied to any other authentication configuration values.
Password Confirm password	The password to use for the authentication credentials if the external peer challenges the registration request.
Request-URI	The Request-URI to include when registering with this SIP peer, specified using the variables (#delimited) defined in Free Form Template Variables on page 116.
Other headers	Additional headers to include when registering with this SIP peer. Click **Add** to add a header. In the **Add Header** dialog box, specify the header name and value(s), using the variables (#delimited) defined in Free Form Template Variables on page 116. Click **Edit** or **Delete** to edit or delete the selected header.

See also:

External SIP Peer on page 105

Add External SIP Peer Dialog Box on page 105

Edit External SIP Peer Dialog Box on page 110

External H.323 SBC

On the **External H.323 SBC** page, you can add or remove H.323 SBCs (session border controllers) that the system can use to reach endpoints outside the enterprise network via prefix-based dialing (Polycom VBP appliances are supported). In an H.323 environment, H.323 SBCs regulate access across the firewall.

This is a supercluster-wide configuration.

Note: SBC Configuration

Only H.323 SBCs are added to the **External H.323 SBC** page. SIP SBCs are configured as SIP peers (see External SIP Peer on page 105) and/or on a per-site basis (see Edit Site Dialog Box on page 285).

H.323 SBCs that are added to the **External H.323 SBC** page are reached by prefix-based dialing (rule 4 of the default dial plan; see The Default Dial Plan and Suggestions for Modifications on page 241).

SBCs to be reached by a dial rule using the **Resolve to IP address** action (rule 6 of the default dial plan) are configured on a per-site basis (see Edit Site Dialog Box on page 285).

In general, H.323 SBCs should be configured on a per-site basis, so that calls to endpoints outside the enterprise network are routed to the SBC assigned to the originating site.

There are three reasons to configure an H.323 SBC on the **External H.323 SBC** page:

- To create a prefix service that allows dialing through the specific SBC by prefix. An SBC configured on this page must have a prefix or prefix range assigned to it and can only be reached by dialing its prefix(es).
- To define a postliminary script to be applied when dialing through the specific SBC.
- For bandwidth management.

  The Polycom RealPresence DMA system is capable of performing call admission control (CAC) while processing an LRQ from a neighbor gatekeeper. This allows the system to reject the call for resource or policy reasons early in the setup process (in response to the LRQ), rather than waiting until later in the call setup.

  In order to perform early CAC, the Polycom RealPresence DMA system must know the caller's media address, which isn't provided in the LRQ and is unknowable for an ordinary gatekeeper. If the gatekeeper is also an SBC, however, it proxies the media. The Polycom RealPresence DMA system can assume that its media address is the same as its signaling address, and proceed with early CAC. The Polycom RealPresence DMA system performs early CAC only in response to LRQs received from SBCs configured on the **External H.323 SBC** page.

The following table describes the fields in the list.

Column	Description
Name	The name of the SBC.
Description	Brief description of the SBC.
Address	Host name or IP address of the SBC.
Prefix Range	The dial string prefix(es) assigned to this SBC. If your dial plan uses the *Dial services by prefix* dial rule (in the default dial plan) to route calls to services, all dial strings beginning with an assigned prefix are forwarded to this SBC for resolution.
Enabled	Indicates whether the system is using the SBC.

See also:

Device Management on page 87

Edit External H.323 SBC Dialog Box on page 123

Add External H.323 SBC Dialog Box

The following table describes the fields in the **Add External H.323 SBC** dialog box.

Note: SBC Configuration

Only H.323 SBCs are added to the **External H.323 SBC** page. SIP SBCs are configured as SIP peers (see External SIP Peer on page 105) and/or on a per-site basis (see Edit Site Dialog Box on page 285).

H.323 SBCs that are added to the **External H.323 SBC** page are reached by prefix-based dialing (rule 4 of the default dial plan; see The Default Dial Plan and Suggestions for Modifications on page 241).

SBCs to be reached by a dial rule using the **Resolve to IP address** action (rule 6 of the default dial plan) are configured on a per-site basis (see Edit Site Dialog Box on page 285).

In general, H.323 SBCs should be configured on a per-site basis, so that calls to endpoints outside the enterprise network are routed to the SBC assigned to the originating site.

Column	Description
External H.323 SBC	
Enabled	Clearing this check box lets you stop using an external SBC without deleting it.
Name	SBC unit name.
Description	The text description displayed in the **External H.323 SBC** list.
Address	Host name or IP address of the SBC.
Port	The SBC's port number. Leave set to 1720 unless you know the unit is using a non-standard port number.
Prefix range	The dial string prefix or prefix range assigned to this SBC. Required. Enter a single prefix (44), a range of prefixes (44-47), or multiple prefixes separated by commas (44,46) The *Dial services by prefix* dial rule in the default dial plan routes calls to the assigned prefix(es) to this SBC for resolution.
Strip prefix	If selected, the system strips the prefix when a call that includes a prefix is routed to this SBC.
Postliminary	A postliminary is an executable script, written in the Javascript language, that defines dial string transformations to be applied before querying the SBC.
Enabled	Lets you turn a postliminary on or off without deleting it.
Script	Type (or paste) the postliminary script you want to apply. Then click **Debug this script** to open the Script Debugging Dialog Box for Preliminaries/Postliminaries and test the script with various variables.

See also:

External H.323 SBC on page 120

Script Debugging Dialog Box for Preliminaries/Postliminaries on page 254

Edit External H.323 SBC Dialog Box

The following table describes the fields in the **Edit External H.323 SBC** dialog box.

Note: SBC Configuration

Only H.323 SBCs are added to the **External H.323 SBC** page. SIP SBCs are configured as SIP peers (see External SIP Peer on page 105) and/or on a per-site basis (see Edit Site Dialog Box on page 285).

H.323 SBCs that are added to the **External H.323 SBC** page are reached by prefix-based dialing (rule 4 of the default dial plan; see The Default Dial Plan and Suggestions for Modifications on page 241).

SBCs to be reached by a dial rule using the **Resolve to IP address** action (rule 6 of the default dial plan) are configured on a per-site basis (see Edit Site Dialog Box on page 285).

In general, H.323 SBCs should be configured on a per-site basis, so that calls to endpoints outside the enterprise network are routed to the SBC assigned to the originating site.

Column	Description
External H.323 SBC	
Enabled	Clearing this check box lets you stop using an external SBC without deleting it.
Name	SBC unit name.
Description	The text description displayed in the **External H.323 SBC** list.
Address	Host name or IP address of the SBC.
Port	The SBC's port number. Leave set to 1720 unless you know the unit is using a non-standard port number.
Prefix range	The dial string prefix or prefix range assigned to this SBC. Required. Enter a single prefix (44), a range of prefixes (44-47), or multiple prefixes separated by commas (44,46) The *Dial services by prefix* dial rule in the default dial plan routes calls to the assigned prefix(es) to this SBC for resolution.
Strip prefix	If selected, the system strips the prefix when a call that includes a prefix is routed to this SBC.
Postliminary	A postliminary is an executable script, written in the Javascript language, that defines dial string transformations to be applied before querying the SBC.
Enabled	Lets you turn a postliminary on or off without deleting it.
Script	Type (or paste) the postliminary script you want to apply. Then click **Debug this script** to open the Script Debugging Dialog Box for Preliminaries/Postliminaries and test the script with various variables.

See also:

External H.323 SBC on page 120

Script Debugging Dialog Box for Preliminaries/Postliminaries on page 254

MCU Management

This chapter describes the Polycom® RealPresence® Distributed Media Application™ (DMA®) 7000 system's MCU management tools and tasks:

- MCUs
- MCU Pools
- MCU Pool Orders

MCUs

The **MCUs** page shows the MCUs, or media servers, known to the Polycom RealPresence DMA system. In a superclustered system, this list encompasses all MCUs throughout the supercluster and is the same on all clusters in the supercluster. It includes:

- MCUs that are available as a conferencing resource for the Polycom RealPresence DMA system's Conference Manager (enabled for conference rooms), but aren't registered with the Call Server. Up to 64 MCUs can be enabled for conference rooms (virtual meeting rooms, or VMRs).
- MCUs that are registered with the Polycom RealPresence DMA system's Call Server as standalone MCUs and/or ISDN gateways, but aren't available to the Conference Manager as conferencing resources.
- MCUs that are both registered with the Call Server and available to the Conference Manager as conferencing resources.

An MCU can appear in this list either because it registered with the Call Server or because it was manually added. If the MCU registered itself, it can be used as a standalone MCU. But in order for Conference Manager to use such an MCU as a conferencing resource, you must edit its entry to enable it for conference rooms and provide the additional configuration information required.

You must organize MCUs configured as conferencing resources into one or more MCU pools (logical groupings of media servers). Then, you can define one or more MCU pool orders that specify the order of preference in which MCU pools are used.

Every conference room (VMR) is associated with an MCU pool order. The pool(s) to which an MCU belongs, and the pool order(s) to which a pool belongs, are used to determine which MCU is used to host a conference. See MCU Pools on page 142 and MCU Pool Orders on page 145.

Note: Resource Management Integration and MCU Pools

If you have a Polycom RealPresence Resource Manager system that uses the RealPresence DMA system API to schedule conferences on the RealPresence DMA system's conferencing resources (MCU pools), you must create MCU pools and pool orders specifically for the use of the RealPresence Resource Manager system. The pool orders should be named in such a way that:

- They appear at the top of the pool order list presented in the RealPresence Resource Manager system.
- Users of that system will understand that they should choose one of those pool orders.

If the RealPresence Resource Manager system is also going to directly schedule conferences on MCUs that it manages, those MCUs should not be part of the conferencing resources (MCU pools) available to the RealPresence DMA system.

Note: MCUs and ISDN Gateway Selection

MCU pools and pool orders are not used to select an ISDN gateway for simplified gateway dialing. See ISDN Gateway Selection Process on page 139.

When a Polycom RealPresence Collaboration Server or RMX MCU is functioning as an ISDN gateway, each call through the gateway consumes two ports, one for the ISDN side and one for the H.323 side. The ports used for gateway calls aren't available for conferences, so gateway operations may significantly reduce the available conferencing resources.

Note: MCU Support

The Polycom RealPresence DMA system supports the use of Cisco Codian 4200, 4500, and MSE 8000 series MCUs as part of the Conference Manager's conferencing resource pool, but their Media Port Reservation feature is not supported. This feature must be set to Disabled on Cisco Codian MCUs in order to use them as part of the Conference Manager's conferencing resource pool.

The Polycom RealPresence DMA system supports the use of Polycom MGC MCUs, but not as part of the Conference Manager's conferencing resource pool. They can register with the Call Server as standalone MCUs (dialed by IP or prefix) and/or ISDN gateways. Their model designation is *Polycom MGC gateway*, even if being used as standalone MCUs.

Note: MCU Connections

In order to efficiently manage multiple calls as quickly as possible, the Polycom RealPresence DMA system uses multiple connections per MCU. By default, a RealPresence Collaboration Server or RMX MCU allows up to 20 connections per user. We recommend not reducing this setting (the MAX_NUMBER_OF_MANAGEMENT_SESSIONS_PER_USER system flag). If you have a RealPresence DMA supercluster with three Conference Manager clusters and a busy conferencing environment, we recommend increasing this value to 30.

Note: Bandwidth Management Requires MCU Registration

For H.323 calls to a conference room (virtual meeting room, or VMR), the RealPresence DMA system can only do bandwidth management if the MCU is registered with it (in a supercluster, registered with any cluster). If the MCU is unregistered or registered to another gatekeeper (not part of the supercluster), the bandwidth for the call is not counted for bandwidth management, site statistics, or the network usage report.

In a SIP signaling environment, in order for a Polycom RealPresence Collaboration Server or RMX MCU to register with the RealPresence DMA system's Call Server, two system flags on the MCU must be set properly:

- Set the MS_ENVIRONMENT flag to NO.
- Make sure the SIP_REGISTER_ONLY_ONCE flag is set to NO or not present.

In order for the Polycom RealPresence DMA system to assign an alternate gatekeeper to an MCU, the MCU must be in a territory that has a backup RealPresence DMA system assigned to it.

Note: Resource Usage Reporting

The RealPresence DMA system reports port numbers based on resource usage for CIF calls. Version 8.1 and later Polycom MCUs report port numbers based on resource usage for HD720p30 calls. In general, 3 CIF = 1 HD720p30, but it varies depending on bridge/card type and other factors.

See your Polycom RealPresence Collaboration Server or RMX system documentation for more detailed information about resource usage.

Considerations when using MCUs with the RealPresence DMA system

In high security mode, the RealPresence DMA system uses only HTTPS for the conference control connection to MCUs, and you must configure your MCUs to accept encrypted connections. We recommend doing so. When unencrypted connections are used, the MCU login name and password are sent unencrypted over the network.

The Polycom RealPresence DMA system knows only what resources an MCU has currently available. It can't know what's been scheduled for future use.

If you have a Polycom CMA system and want to use the same RMX MCU (v6.0 and above) for both reservationless and scheduled conferences, determine how many ports you want to set aside for scheduled conferences and designate those as ports reserved for the CMA system. This feature is not available for Cisco Codian MCUs or for use with a Polycom RealPresence Resource Manager system. The RealPresence Resource Manager system must have exclusive use of any MCUs on which it directly schedules conferences. Those MCUs should not be added to the RealPresence DMA system's conferencing resources.

The Automatic Password Generation feature, introduced in RMX version 7.0.2, is not compatible with the Polycom RealPresence DMA system. On Polycom MCUs to be used with the Polycom RealPresence DMA system, disable this feature by setting the system flags NUMERIC_CONF_PASS_DEFAULT_LEN and NUMERIC_CHAIR_PASS_DEFAULT_LEN both to 0 (zero).

The following table describes the fields in the list (the **View Details** command lets you see this information in a more readable form for the selected MCU).

Column	Description
	Connection and service status and capabilities:  Connected  Disconnected  Connected securely (encrypted connection)  In service  Out of service  Busied out  Not licensed  Supports conference recording Doesn't support conference recording  Supports shared number dialing IVR service  Functions as a gateway  Supports SVC conferences (see SVC Conferencing Support on page 17)  Warning  Supports cascaded conferences with Lync 2013 MCUs Hover over an icon to see the associated status message.
Name	The name of the MCU.
Model	The type of MCU.
Version	The version of software on the MCU.
IP Addresses	The IP address for the MCU's management interface (M) and signaling interface (S).
Signaling Type	The type of signaling for which the MCU is configured: H.323, SIP, or both.
Ports Reserved	The number of video and voice ports on the MCU that are reserved for the Polycom CMA system and therefore off-limits to the Polycom RealPresence DMA system. Applies only to MCUs that are enabled for conference rooms (available as a conferencing resource for the Polycom RealPresence DMA system's Conference Manager). Reserving a portion of an MCU's capacity for the Polycom CMA system enables that portion to be used for scheduled conferences (where MCU resources are reserved in advance). This feature is available only on RMX v. 6.0 or later MCUs and with a Polycom CMA system. It's not available for use with a Polycom RealPresence Resource Manager system, which can't share MCUs with the RealPresence DMA system.
Prefix	The dialing prefix assigned to the MCU, if any. MCUs without a prefix are unavailable for direct prefix-based dialing. MCUs don't need a prefix to be used as conferencing resources by the Conference Manager.

Column	Description
Registration Status	The registration status of the device with the Call Server: • *Active* — The device is registered and can make and receive calls. • *Inactive* — The device's registration has expired. Whether it can make and receive calls depends on the system's rogue call policy (see Call Server Settings on page 234). It can register again. • *Permanent* — The device's registration never expires. • *Quarantined* — The device is registered, but it can't make or receive calls until you remove it from quarantine. • *Quarantined (Inactive)* — The device was quarantined, and its registration has expired. It can register again, returning to Quarantined status. • *Blocked* — The device is not permitted to register. Whether it can make and receive calls depends on the system's rogue call policy. It remains blocked from registering until you unblock it. A device's registration status can be determined by: • An action by the device. • An action applied to it manually on this page. • The expiration of a timer. • The application of a registration policy and admission policy (see Registration Policy on page 264).
Exceptions	Shows any exceptions with which the device was flagged as a result of applying a registration policy.
MCU Pools	The MCU pools in which this MCU is used, if it's enabled for conference rooms (available as a conferencing resource for the Polycom RealPresence DMA system's Conference Manager).
Site	The site in which the MCU is located (see Sites on page 279).

The **Actions** list associated with the **MCU** list contains the items in the following table.

Command	Description
View Details	Opens the **Device Details** dialog box for the selected MCU.
Add	Opens the **Add MCU** dialog box, where you can add an MCU to the pool of devices known to the Polycom RealPresence DMA system.
Edit	Opens the **Edit MCU** dialog box for the selected MCU, where you can change its information and settings.
Delete	Removes the selected MCU from the pool of devices that are available to the Polycom RealPresence DMA system as conferencing resources. A dialog box asks you to confirm. You can't delete an MCU if: • The MCU is hosting one or more conferences. Busy out the MCU and wait for all conferences to end. • The MCU is registered with the Call Server. Unregister the MCU.

Command	Description
Start Using	Enables the Polycom RealPresence DMA system to start using the selected MCUs as conferencing resources or ISDN gateways (for simplified gateway dialing). This command only affects Conference Manager and simplified gateway dialing functionality. It doesn't affect MCUs that are simply registered with the Call Server.
Stop Using	Stops the Polycom RealPresence DMA system from using the selected MCUs as conferencing resources or ISDN gateways. A dialog box asks you to confirm. If you do so, existing calls on the MCUs are terminated or (for SIP calls only) migrated to in-service MCUs with available capacity. If any of the MCUs are ISDN gateways, the system stops using them for simplified gateway dialing. This command immediately terminates the system's use of the MCUs as conferencing resources or ISDN gateways. It has no effect on the MCUs themselves, which continue to accept any calls from other sources.
Busy Out	Stops the Polycom RealPresence DMA system from creating new conferences on the selected MCUs, but allows existing conferences to continue and accepts new calls to those conferences. If any of the MCUs are ISDN gateways, the system stops using them for simplified gateway dialing. A dialog box asks you to confirm. This gracefully winds down the system's use of the MCU. It has no effect on the MCUs themselves, which continue to accept any calls from other sources.
Quarantine	Allows the selected MCUs to register (or remain registered) with the Call Server, but not to make or receive calls. If the MCUs are quarantined, this becomes **Unquarantine**. **Note:** Quarantining is intended only for MCUs that are registered with the Polycom RealPresence DMA system's Call Server as standalone MCUs and/or ISDN gateways, but are not available to the Conference Manager as conferencing resources. Quarantining does not prevent VMR calls to MCUs configured as conferencing resources. Quarantining an MCU that's both registered with the Call Server and configured as a conferencing resource for the Conference Manager may have unpredictable results.
Block Registrations	Prevents the selected MCUs from registering with the Call Server. If the MCUs are blocked, this becomes **Unblock Registrations**.

See also:

Add MCU Dialog Box on page 129
Edit MCU Dialog Box on page 133
MCU Procedures on page 139
MCU Pools on page 142
MCU Pool Orders on page 145

Add MCU Dialog Box

Lets you add an MCU, gateway, or combination of the two to the pool of devices available to the Polycom RealPresence DMA system.

Note: MCU Support

The Polycom RealPresence DMA system supports the use of Cisco Codian 4200, 4500, and MSE 8000 series MCUs as part of the Conference Manager's conferencing resource pool, but their Media Port Reservation feature is not supported. This feature must be set to Disabled on Cisco Codian MCUs in order to use them as part of the Conference Manager's conferencing resource pool.

The Polycom RealPresence DMA system supports the use of Polycom MGC MCUs, but not as part of the Conference Manager's conferencing resource pool. They can register with the Call Server as standalone MCUs (dialed by IP or prefix) and/or ISDN gateways. Their model designation is *Polycom MGC gateway*, even if being used as standalone MCUs.

Note: MCUs and ISDN Gateway Selection

MCU pools and pool orders are not used to select an ISDN gateway for simplified gateway dialing. See ISDN Gateway Selection Process on page 139.

When a Polycom MCU is functioning as an ISDN gateway, each call through the gateway consumes two ports, one for the ISDN side and one for the H.323 side. The ports used for gateway calls aren't available for conferences, so gateway operations may significantly reduce the available conferencing resources.

Note: Resource Usage Reporting

The RealPresence DMA system reports port numbers based on resource usage for CIF calls. Version 8.1 and later Polycom MCUs report port numbers based on resource usage for HD720p30 calls. In general, 3 CIF = 1 HD720p30, but it varies depending on bridge/card type and other factors.

See your Polycom RealPresence Collaboration Server or RMX system documentation for more detailed information about resource usage.

The following table describes the fields in the dialog box.

Field	Description
External MCU	
Name	Name for the MCU (up to 32 characters; must not include any of the following: , " ; ? : = *).
Type	Lists the types of MCUs the system supports. Must be set to the correct MCU type in order for the RealPresence DMA system to be able to connect to it. For an MGC MCU, this must be set to *Polycom MGC gateway*, even if it's being used as a standalone MCU.
Management IP address	Host name or IP address for logging into the MCU (to use it as a conferencing resource). **Note:** Polycom MCUs don't include their management IP address in the Subject Alternate Name (SAN) field of the CSR (Certificate Signing Request), so their certificates identify them only by the Common Name (CN). Therefore if **Skip certificate validation for server connecting** is off (see Security Settings on page 50), the MCU's management interface must be identified by the name specified in the CN field (usually the FQDN), not by IP address.

Field	Description
Admin user ID	Administrative user ID with which the Polycom RealPresence DMA system can log into the MCU. For a maximum security environment, this must be a machine account created on the MCU. Note that the RMX and RealPresence Collaboration Server MCUs use case-sensitive machine names (and thus FQDNs) when creating machine accounts.
Password	Password for the administrative user ID.
Video ports reserved for Resource Management System direct/scheduled conferences	The number of video ports on this MCU that are off-limits to the Polycom RealPresence DMA system. Set this to the number of ports you want to reserve for your Polycom CMA system to use for scheduled conferences (requires RMX v6.0 or later). **Note:** This feature is not for use with a Polycom RealPresence Resource Manager system. The RealPresence Resource Manager system must have exclusive use of any MCUs on which it directly schedules conferences. Those MCUs should not be added to the RealPresence DMA system's conferencing resources.
Voice ports reserved for Resource Management System direct/scheduled conferences	The number of voice ports on this MCU that are off-limits to the Polycom RealPresence DMA system. Set this to the number of ports you want to reserve for your Polycom CMA system to use for scheduled conferences (requires RMX v6.0 or later). **Note:** This feature is not for use with a Polycom RealPresence Resource Manager system. The RealPresence Resource Manager system must have exclusive use of any MCUs on which it directly schedules conferences. Those MCUs should not be added to the RealPresence DMA system's conferencing resources.
Reserved ports per cascade-for-size conference	The number of video ports on this MCU to reserve for cascade links when a conference that has cascade for size enabled (see Cascading for Size on page 194) created on this MCU. For each cascade-for-size conference on the MCU, this number of video ports is subtracted from the number of video ports available when the system is determining which MCU has the most ports available.
Strip prefix	If selected, the RealPresence DMA system strips the prefix when a call that includes a prefix is routed to this MCU.
Direct dial-in prefix	The dialing prefix assigned to the MCU, if any. MCUs without a prefix are unavailable for direct prefix-based dialing. MCUs don't need a prefix to be used as conferencing resources by the Conference Manager. Gateways don't need a direct dial-in prefix if you define simplified ISDN gateway dialing prefixes so that the RealPresence DMA system can choose from a pool of available gateways (see Add Simplified ISDN Gateway Dialing Prefix Dialog Box on page 272).
Signaling IP for H.323	The address that the MCU uses for H.323 signaling. If you specify the login information for the MCU, this field is optional (the system can get the address from the MCU). If not, and H.323 is enabled, this field is required.

Field	Description
Signaling IP for SIP	The address that the MCU uses for SIP signaling. If you specify the login information for the MCU, this field is optional (the system can get the address from the MCU). If not, and SIP is enabled, this field is required.
Transport type	The SIP transport type to use with this MCU. If the Polycom RealPresence DMA system's security settings don't allow unencrypted connections, this must be TLS.
Signaling type	Select SIP, H.323, or both, depending on the configuration of the Polycom RealPresence DMA system and the MCU.
Enable for conference rooms	Makes the MCU available as a conferencing resource for the Polycom RealPresence DMA system's Conference Manager. Up to 64 MCUs can be enabled for conference rooms. **Caution:** Before adding an MCU to the RealPresence DMA system's conferencing resources, make sure that MCU isn't already a RealPresence Resource Manager system conferencing resource. The RealPresence Resource Manager system must have exclusive use of any MCUs on which it directly schedules conferences.
Enable gateway profiles	Makes the MCU available for selection as an ISDN gateway device and enables the **Gateway Profiles** tab for configuring gateway session profiles. Gateway session profiles indicate to the MCU the bandwidth parameters to be used for the ISDN connection. They can be used for: • ISDN gateway calls to the MCU's direct dial-in prefix. In this case, the caller specifies the session profile prefix in the dial string: `<direct dial-in prefix><session profile prefix><delimiter><E.164 number>` • Calls to simplified ISDN gateway dialing prefixes (see Add Simplified ISDN Gateway Dialing Prefix Dialog Box on page 272). In this case, the RealPresence DMA system selects the MCU/gateway and its session profile. See ISDN Gateway Selection Process on page 139.
Class of service	Select to specify the default class of service and the bit rate limits for this MCU. If specified, calls to the MCU use its class of service or the calling endpoint's, whichever is better.
Maximum bit rate (kbps)	Select the maximum bit rate for calls to this MCU.
Minimum downspeed bit rate (kbps)	Select the minimum bit rate to which calls to this MCU can be downspeeded to manage bandwidth. If this minimum isn't available, the call is dropped. The minimum that applies to a call is the higher of the MCU's and the calling endpoint's.
Permanent	Prevents the MCU's registration with the Call Server from ever expiring. For MCUs, this option should always be selected (the default).
Alert when MCU unregisters	If the MCU unregisters from the Call Server or its registration expires (if **Permanent** is turned off), an informational alert is triggered (see Alert 5003 on page 365).

Field	Description
Gateway Profiles	
Copy from entry for ISDN gateway	Lets you copy the delimiter and session profiles from another ISDN gateway instead of entering them below. This is especially useful for MGC devices because each ISDN network card must be registered separately, but all cards support the same gateway configuration.
Dial string delimiter	The dial string delimiter used to separate the session profile prefix from the ISDN E.164 number.
Session Profile table	Lists the defined session profile prefixes. A session profile prefix is a numeric dial string prefix that specifies a bit rate for the call and which protocols it supports. Click **Add** to add a session profile. Click **Edit** or **Delete** to change or delete the selected profile. You can't change or delete session profiles that the MCU/gateway registered with, only those that you added.
Media IP Addresses	
Add new media IP address	If you specify the login information for the MCU, the system can get media addresses from the MCU. If not, enter an IP address for media streams and click **Add** to add it the list below.
Media IP addresses	List of media addresses for the MCU. Click **Remove** to delete the selected address from the list.
Postliminary	A postliminary is an executable script, written in the Javascript language, that defines dial transformations to be applied before routing the call to the MCU/gateway.
Enabled	Lets you turn a postliminary on or off without deleting it.
Script	Type (or paste) the postliminary script you want to apply. Then click **Debug this script** to open the Script Debugging Dialog Box for Preliminaries/Postliminaries and test the script with various variables.

See also:

MCUs on page 124

MCU Procedures on page 139

Add Session Profile Dialog Box on page 138

Edit Session Profile Dialog Box on page 138

Edit MCU Dialog Box

Lets you edit an MCU. If you intend to edit the login information for the MCU (**Management IP**, **Admin ID**, or **Password**), you must first stop using the MCU (terminating existing calls and conferences) or busy it out and wait for existing calls and conferences to end.

Note: MCU Support

The Polycom RealPresence DMA system supports the use of Cisco Codian 4200, 4500, and MSE 8000 series MCUs as part of the Conference Manager's conferencing resource pool, but their Media Port Reservation feature is not supported. This feature must be set to Disabled on Cisco Codian MCUs in order to use them as part of the Conference Manager's conferencing resource pool.

The Polycom RealPresence DMA system supports the use of Polycom MGC MCUs, but not as part of the Conference Manager's conferencing resource pool. They can register with the Call Server as standalone MCUs (dialed by IP or prefix) and/or ISDN gateways. Their model designation is *Polycom MGC gateway*, even if being used as standalone MCUs.

Note: MCUs and ISDN Gateway Selection

MCU pools and pool orders are not used to select an ISDN gateway for simplified gateway dialing. See ISDN Gateway Selection Process on page 139.

When a Polycom MCU is functioning as an ISDN gateway, each call through the gateway consumes two ports, one for the ISDN side and one for the H.323 side. The ports used for gateway calls aren't available for conferences, so gateway operations may significantly reduce the available conferencing resources.

Note: Resource Usage Reporting

The RealPresence DMA system reports port numbers based on resource usage for CIF calls. Version 8.1 and later Polycom MCUs report port numbers based on resource usage for HD720p30 calls. In general, 3 CIF = 1 HD720p30, but it varies depending on bridge/card type and other factors.

See your Polycom RealPresence Collaboration Server or RMX system documentation for more detailed information about resource usage.

The following table describes the fields in the dialog box.

Field	Description
External MCU	
Name	Name for the MCU (up to 32 characters; must not include any of the following: , " ; ? : = *).
Type	Lists the types of MCUs the system supports. Must be set to the correct MCU type in order for the RealPresence DMA system to be able to connect to it. For an MGC MCU, this must be set to *Polycom MGC gateway*, even if it's being used as a standalone MCU.
Management IP address	Host name or IP address for logging into the MCU (to use it as a conferencing resource). **Note:** Polycom MCUs don't include their management IP address in the Subject Alternate Name (SAN) field of the CSR (Certificate Signing Request), so their certificates identify them only by the Common Name (CN). Therefore if **Skip certificate validation for server connecting** is off (see Security Settings on page 50), the MCU's management interface must be identified by the name specified in the CN field (usually the FQDN), not by IP address.

Field	Description
Admin user ID	Administrative user ID with which the Polycom RealPresence DMA system can log into the MCU. For a maximum security environment, this must be a machine account created on the MCU. Note that the RMX and RealPresence Collaboration Server MCUs use case-sensitive machine names (and thus FQDNs) when creating machine accounts.
Password	Password for the administrative user ID.
Video ports reserved for Resource Management System direct/scheduled conferences	The number of video ports on this MCU that are off-limits to the Polycom RealPresence DMA system. Set this to the number of ports you want to reserve for your Polycom CMA system to use for scheduled conferences (requires RMX v6.0 or later). **Note:** This feature is not for use with a Polycom RealPresence Resource Manager system. The RealPresence Resource Manager system must have exclusive use of any MCUs on which it directly schedules conferences. Those MCUs should not be added to the RealPresence DMA system's conferencing resources.
Voice ports reserved for Resource Management System direct/scheduled conferences	The number of voice ports on this MCU that are off-limits to the Polycom RealPresence DMA system. Set this to the number of ports you want to reserve for your Polycom CMA system to use for scheduled conferences (requires RMX v6.0 or later). **Note:** This feature is not for use with a Polycom RealPresence Resource Manager system. The RealPresence Resource Manager system must have exclusive use of any MCUs on which it directly schedules conferences. Those MCUs should not be added to the RealPresence DMA system's conferencing resources.
Reserved ports per cascade-for-size conference	The number of video ports on this MCU to reserve for cascade links when a conference that has cascade for size enabled (see Cascading for Size on page 194) created on this MCU. For each cascade-for-size conference on the MCU, this number of video ports is subtracted from the number of video ports available when the system is determining which MCU has the most ports available.
Strip prefix	If selected, the system strips the prefix when a call that includes a prefix is routed to this MCU.
Direct dial-in prefix	The dialing prefix assigned to the MCU, if any. MCUs without a prefix are unavailable for direct prefix-based dialing. MCUs don't need a prefix to be used as conferencing resources by the Conference Manager. Gateways don't need a direct dial-in prefix if you define simplified ISDN gateway dialing prefixes so that the RealPresence DMA system can choose from a pool of available gateways (see Add Simplified ISDN Gateway Dialing Prefix Dialog Box on page 272).

Field	Description
Signaling IP for H.323	The dialing prefix assigned to the MCU, if any. MCUs without a prefix are unavailable for direct prefix-based dialing. MCUs don't need a prefix to be used as conferencing resources by the Conference Manager. Gateways don't need a direct dial-in prefix if you define simplified ISDN gateway dialing prefixes so that the RealPresence DMA system can choose from a pool of available gateways (see Add Simplified ISDN Gateway Dialing Prefix Dialog Box on page 272).
Signaling IP for SIP	The address that the MCU uses for SIP signaling. If you specify the login information for the MCU, this field is optional (the system can get the address from the MCU). If not, and SIP is enabled, this field is required.
Transport type	The SIP transport type to use with this MCU. If the Polycom RealPresence DMA system's security settings don't allow unencrypted connections, this must be TLS.
Signaling type	Select SIP, H.323, or both, depending on the configuration of the Polycom RealPresence DMA system and the MCU.
Enable for conference rooms	Makes the MCU available as a conferencing resource for the Polycom RealPresence DMA system's Conference Manager. Up to 64 MCUs can be enabled for conference rooms. **Caution:** Before adding an MCU to the RealPresence DMA system's conferencing resources, make sure that MCU isn't already a RealPresence Resource Manager system conferencing resource. The RealPresence Resource Manager system must have exclusive use of any MCUs on which it directly schedules conferences.
Enable gateway profiles	Makes the MCU available for selection as an ISDN gateway device and enables the **Gateway Profiles** tab for configuring gateway session profiles. Gateway session profiles indicate to the MCU the bandwidth parameters to be used for the ISDN connection. They can be used for: • ISDN gateway calls to the MCU's direct dial-in prefix. In this case, the caller specifies the session profile prefix in the dial string: `<direct dial-in prefix><session profile prefix><delimiter><E.164 number>` • Calls to simplified ISDN gateway dialing prefixes (see Add Simplified ISDN Gateway Dialing Prefix Dialog Box on page 272). In this case, the RealPresence DMA system selects the MCU/gateway and its session profile. See ISDN Gateway Selection Process on page 139.
Class of service	Select to specify the default class of service and the bit rate limits for this MCU. If specified, calls to the MCU use its class of service or the calling endpoint's, whichever is better.
Maximum bit rate (kbps)	Select the maximum bit rate for calls to this MCU.

Field	Description
Minimum downspeed bit rate (kbps)	Select the minimum bit rate to which calls to this MCU can be downspeeded to manage bandwidth. If this minimum isn't available, the call is dropped. The minimum that applies to a call is the higher of the MCU's and the calling endpoint's.
Permanent	Prevents the MCU's registration with the Call Server from ever expiring. For MCUs, this option should always be selected (the default).
Alert when MCU unregisters	If the MCU unregisters from the Call Server or its registration expires (if **Permanent** is turned off), an informational alert is triggered (see Alert 5003 on page 365).
Gateway Profiles	
Copy from entry for ISDN gateway	Lets you copy the delimiter and session profiles from another ISDN gateway instead of entering them below. This is especially useful for MGC devices because each ISDN network card must be registered separately, but all cards support the same gateway configuration.
Dial string delimiter	The dial string delimiter used to separate the session profile prefix from the ISDN E.164 number.
Session Profile table	Lists the defined session profile prefixes. A session profile prefix is a numeric dial string prefix that specifies a bit rate for the call and which protocols it supports. Click **Add** to add a session profile. Click **Edit** or **Delete** to change or delete the selected profile. You can't change or delete session profiles that the MCU/gateway registered with, only those that you added.
Media IP Addresses	
Add new media IP address	If you specify the login information for the MCU, the system can get media addresses from the MCU. If not, enter an IP address for media streams and click **Add** to add it the list below.
Media IP addresses	List of media addresses for the MCU. Click **Remove** to delete the selected address.
Postliminary	A postliminary is an executable script, written in the Javascript language, that defines dial transformations to be applied before routing the call to the MCU/gateway.
Enabled	Lets you turn a postliminary on or off without deleting it.
Script	Type (or paste) the postliminary script you want to apply. Then click **Debug this script** to open the Script Debugging Dialog Box for Preliminaries/Postliminaries and test the script with various variables.

See also:

MCUs on page 124
MCU Procedures on page 139
Add Session Profile Dialog Box on page 138
Edit Session Profile Dialog Box on page 138

Add Session Profile Dialog Box

Lets you add a session profile prefix to the ISDN gateway. The following table describes the fields in the dialog box.

Field	Description
Session profile	Numeric dial string prefix for this profile.
Bit rate	Bit rate of calls using this profile.
H.320 H.323 PSTN SIP	Select the protocol(s) for this profile. Only H.320 and PSTN are relevant when adding a profile. The others are selected if the gateway specified them when registering.

See also:

Add MCU Dialog Box on page 129
Edit MCU Dialog Box on page 133

Edit Session Profile Dialog Box

Lets you edit the selected session profile. You can’t edit session profiles that the MCU/gateway registered with, only those that you added.

The following table describes the fields in the dialog box.

Field	Description
Session profile	Numeric dial string prefix for this profile.
Bit rate	Bit rate of calls using this profile.
H.320 PSTN H.323 SIP	Select the protocol(s) for this profile. Only H.320 and PSTN are relevant when editing a profile you added. The other two are selected if the gateway specified them when registering.

See also:

Add MCU Dialog Box on page 129
Edit MCU Dialog Box on page 133

ISDN Gateway Selection Process

When the dial string begins with a simplified ISDN gateway dialing prefix, the Polycom RealPresence DMA system chooses an ISDN gateway by applying the following steps:

1. Strip the ISDN gateway dialing prefix from the dial string, leaving the E.164 number.
2. From the in-service (not busied out or out of service) gateways, select the ones that have a profile with a matching or higher bit rate (higher bit rate can only be used for RealPresence Collaboration Server or RMX MCUs). If none, go to 3; otherwise, go to 4.
3. From the remaining gateways, select those with a profile bit rate lower than the requested bit rate. If none, reject the call.
4. From the remaining gateways, select those that match the country code and area code of the dialed number. If none, go to 5; otherwise, go to 6.
5. From the remaining gateways, select those that match the country code of the dialed number, if any.
6. From the remaining gateways, select those with a profile that has the closest bit rate. An exact match is preferred.
7. From the remaining gateways, select those that are in the same site as the calling endpoint, if any.
8. From the remaining gateways, select one using a round-robin method.
9. If the call fails because of no capacity on the selected gateway, select the next gateway left in 8. If none, start again at 2 (omitting the gateway that failed). If none left, reject the call.
10. If a gateway is successfully selected, assemble a dial string to send to the gateway as follows:
    `<direct dial-in prefix><session profile prefix><delimiter><E.164 number>`

See also:

MCUs on page 124

Add MCU Dialog Box on page 129

Edit MCU Dialog Box on page 133

MCU Procedures

Note: Refer to MCU Notes
See all the notes in MCUs on page 124.

To view information about an MCU

1. Go to **Network > MCU > MCUs**.

   The **MCUs** list appears.
2. In the list, select the MCU and in the **Actions** list, click **View Details**.

   The **Device Details** dialog box appears, displaying detailed information about the MCU.

To add an MCU

1. Go to **Network > MCU > MCUs**.
2. In the **Actions** list, click **Add**.
3. In the **Add MCU** dialog box, complete the editable fields. See Add MCU Dialog Box on page 129.

4 To set aside some of the MCU's capacity for the Polycom CMA system's use, set **Video ports reserved for CMA system** and **Voice ports reserved for CMA system** to the desired values (requires RMX v6.0 and above).

The ports reserved for the Polycom CMA system can be used by that system for scheduled conferences.

Note: MCUs and RealPresence Resource Manager Systems
This feature is not for use with a Polycom RealPresence Resource Manager system. The RealPresence Resource Manager system must have exclusive use of any MCUs on which it directly schedules conferences. Those MCUs should not be added to the RealPresence DMA system's conferencing resources.

5 To use a gateway-capable MCU as an ISDN gateway, select the **Enable gateway profiles** check box and, on the **Gateway Profiles** tab, specify a dial string delimiter and add one or more session profiles.

6 Click **OK**.

The new MCU appears in the **MCUs** list. If the MCU is configured as a conferencing resource, it's placed into service.

7 If the MCU is configured as a conferencing resource, add it to the desired MCU pool(s). See MCU Pools on page 142.

The pool(s) to which the MCU belongs, and the pool order(s) to which a pool belongs, are used to determine which MCU is used for a conference. See MCU Pool Orders on page 145.

To edit an MCU

1 On the Dashboard, determine whether there are existing calls and conferences on the MCU you want to edit.

2 Go to **Network > MCU > MCUs**.

3 In the **MCUs** list, select the MCU of interest. If the MCU is being used as a conferencing resource, do the following:

a In the **Actions** list, select **Busy Out**. When prompted, confirm.

b Wait for any existing calls and conferences to finish.

4 In the **Actions** list, click **Edit**.

5 In the **Edit MCU** dialog box, edit the fields as required. See Edit MCU Dialog Box on page 133.

6 To set aside more or fewer ports for the Polycom CMA system's use, change the **Video ports reserved for CMA system** and **Voice ports reserved for CMA system** values (requires RMX v6.0 and above).

Note: MCUs and RealPresence Resource Manager Systems
This feature is not for use with a Polycom RealPresence Resource Manager system. The RealPresence Resource Manager system must have exclusive use of any MCUs on which it directly schedules conferences. Those MCUs should not be added to the RealPresence DMA system's conferencing resources.

7 To use a gateway-capable MCU as an ISDN gateway, select the **Enable gateway profiles** check box and, on the **Gateway Profiles** tab, specify a dial string delimiter and add or change session profiles. To stop using it, clear the **Enable gateway profiles** check box.

8 Click **OK**.

9 If the MCU is configured as a conferencing resource, optionally change the MCU pool(s) to which it's assigned. See MCU Pools on page 142.

Pools and pool orders are used to determine which MCU is used for a conference. See MCU Pool Orders on page 145.

To delete an MCU

1 On the Dashboard, verify that there are no calls and conferences on the MCU you want to delete.

2 Go to **Network > MCU > MCUs**.

3 In the **MCUs** list, select the MCU you want to remove from the Polycom RealPresence DMA system's pool of available conferencing resources.

4 In the **Actions** list, select **Delete**.

5 When asked to confirm that you want to delete the selected MCU, click **Yes**.

To immediately stop using one or more MCUs for conferencing and simplified ISDN dialing

1 Go to **Network > MCU > MCUs**.

2 In the **MCUs** list, select the MCUs of interest.

3 In the **Actions** list, select **Stop Using**.

4 When asked to confirm that you want to stop using the MCUs, click **Yes**.

The Polycom RealPresence DMA system immediately terminates all H.323 calls and conferences that it placed on those MCUs (for SIP calls only, it migrates the calls to in-service MCUs with available capacity). It also excludes these MCUs from consideration for any future conferences and simplified ISDN dialing calls.

This has no effect on the MCUs themselves, which continue to accept any calls from other sources.

To stop using one or more MCUs, but allow existing calls and conferences to continue

1 Go to **Network > MCU > MCUs**.

2 In the **MCUs** list, select the MCUs of interest.

3 In the **Actions** list, select **Busy Out**.

4 When asked to confirm that you want to busy out the MCUs, click **Yes**.

The Polycom RealPresence DMA system stops creating new conferences on those MCUs, but it allows existing conferences to continue and accepts new calls to those conferences. It also excludes these MCUs from consideration for simplified ISDN dialing calls.

This has no effect on the MCUs themselves, which continue to accept any calls from other sources.

To start using one or more MCUs for conferencing and simplified ISDN dialing again

1 Go to **Network > MCU > MCUs**.

2 In the **MCUs** list, select the out-of-service MCUs of interest.

3 In the **Actions** list, select **Start Using**.

See also:

MCUs on page 124
Add MCU Dialog Box on page 129
Edit MCU Dialog Box on page 133

MCU Pools

The **MCU Pools** list shows the MCU pools, or logical groupings of media servers, that are defined in the Polycom RealPresence DMA system. In a superclustered system, this list is the same on all clusters in the supercluster. A pool may group MCUs based on location, capability, or some other factor.

Note: MCU Pools vs. MCU Zones
MCU pools were called MCU zones in earlier versions of the Polycom RealPresence DMA system. The name was changed to avoid confusion with the concept of gatekeeper zones.

Every conference room (VMR) is associated with an MCU pool order (either by direct assignment, via the user's enterprise group membership, or from the system default). The pool(s) to which an MCU belongs, and the pool order(s) to which a pool belongs, are used to determine which MCU is used to host a conference. For details of how an MCU is chosen for a conference, see MCU Pool Orders on page 145.

Note: MCU Pool Orders
If you have a Polycom RealPresence Resource Manager system that uses the RealPresence DMA system API to schedule conferences on the RealPresence DMA system's conferencing resources (MCU pools), you must create MCU pools and pool orders specifically for the use of the RealPresence Resource Manager system. The pool orders should be named in such a way that:

- They appear at the top of the pool order list presented in the RealPresence Resource Manager system.
- Users of that system will understand that they should choose one of those pool orders.

If the RealPresence Resource Manager system is also going to be used to directly schedule conferences on MCUs, those MCUs should not be part of the conferencing resources (MCU pools) available to the RealPresence DMA system.

Note: MCUs and ISDN Gateway Selection
MCU pools and pool orders are not used to select an ISDN gateway for simplified gateway dialing. See ISDN Gateway Selection Process on page 139.

You can use various criteria for organizing MCUs into pools, depending on how you want the MCU resources allocated for conferencing. For instance:

- You could put all MCUs in a specific site or domain into a pool. Then, assign a pool order to all users in that site or domain (via group membership) ensuring that their conferences are preferentially routed to MCUs in that pool.
- You could put one or more MCUs into a pool to be used only by executives, and put that pool into a pool order associated only with those executives' conference rooms.
- You could put MCUs with special capabilities into a pool, and put that pool into a pool order associated only with custom conference rooms requiring those capabilities.

The following table describes the fields in the list.

Column	Description
Name	Name of the MCU pool.
Description	Description of the pool, such as the geographic location of the MCUs it contains.
MCUs	The MCUs that are in the pool.

The **Actions** list associated with the **MCU Pools** list contains the items in the following table.

Command	Description
Add	Opens the **Add MCU Pool** dialog box, where you can define a new pool.
Edit	Opens the **Edit MCU Pool** dialog box for the selected pool, where you can change its name, description, and the MCUs it includes.
Delete	Removes the selected MCU pool from the list of pools that are available. A dialog box informs you of the effect on pool orders and asks you to confirm.

See also:

Edit MCU Pool Dialog Box on page 143
MCU Pool Procedures on page 144

Add MCU Pool Dialog Box

Lets you define a new MCU pool in the RealPresence DMA system. The following table describes the fields in the dialog box.

Field	Description
Name	Name of the MCU pool.
Description	Description of the pool. This should be something meaningful, such as the geographic location of the MCUs that the pool contains.
Available MCUs	Lists the MCUs available to the Polycom RealPresence DMA system.
Selected MCUs	Lists the MCUs included in the pool. The arrow buttons move MCUs from one list to the other.

See also:

MCU Pools on page 142
MCU Pool Procedures on page 144

Edit MCU Pool Dialog Box

Lets you edit an MCU pool. The following table describes the fields in the dialog box.

Field	Description
Name	Name of the MCU pool.
Description	Brief description of the pool. This should be something meaningful, such as the geographic location of the MCUs that the pool contains.
Available MCUs	Lists the MCUs available to the Polycom RealPresence DMA system.
Selected MCUs	Lists the MCUs included in the pool. The arrow buttons move MCUs from one list to the other.

See also:

MCU Pools on page 142

MCU Pool Procedures on page 144

MCU Pool Procedures

To add an MCU Pool

1. Go to **Network > MCU > MCU Pools**.
2. In the **Actions** list, click **Add**.
3. In the **Add MCU Pool** dialog box, enter a name and description, and select the MCUs to include in the pool. See Add MCU Pool Dialog Box on page 143.
4. Click **OK**.

   The new MCU pool appears in the **MCU Pools** list. The MCUs included in the pool are displayed.

To edit an MCU Pool

1. Go to **Network > MCU > MCU Pools**.
2. In the **MCU Pools** list, select the pool, and in the **Actions** list, click **Edit**.
3. In the **Edit MCU Pool** dialog box, edit the fields as required. See Edit MCU Pool Dialog Box on page 143.
4. Click **OK**.

   The changes you made appear in the **MCU Pools** list.

To delete an MCU Pool

1. Go to **Network > MCU > MCU Pools**.
2. In the **MCU Pools** list, select the MCU pool you want to remove.
3. In the **Actions** list, select **Delete**.

   If the pool is included in one or more pool orders, the system warns you and provides information about the consequences of deleting it.
4. When asked to confirm that you want to delete the selected MCU pool, click **Yes**.

See also:

MCU Pools on page 142
Add MCU Pool Dialog Box on page 143
Edit MCU Pool Dialog Box on page 143

MCU Pool Orders

The **MCU Pool Orders** list shows the MCU pool orders that are defined in the Polycom RealPresence DMA system. In a superclustered system, this list is the same on all clusters in the supercluster. A pool order contains one or more MCU pools and specifies the order of preference in which the pools are used.

Note: MCU Pools vs. MCU Zones
MCU pools were called MCU zones in earlier versions of the Polycom RealPresence DMA system. The name was changed to avoid confusion with the concept of gatekeeper zones.

Every conference room (VMR) is associated with an MCU pool order in one of the following ways:

- By direct assignment. See Edit Conference Room Dialog Box on page 317.
- Via the user's enterprise group membership.
- From the system default.

The pool(s) to which an MCU belongs, and the pool order(s) to which a pool belongs, are used to determine which MCU is used to host a conference. For some examples of how MCUs can be organized into pools for specific purposes, see MCU Pools on page 142.

Note: MCU Pool Orders
If you have a Polycom RealPresence Resource Manager system that uses the RealPresence DMA system API to schedule conferences on the RealPresence DMA system's conferencing resources (MCU pools), you must create MCU pools and pool orders specifically for the use of the RealPresence Resource Manager system. The pool orders should be named in such a way that:

- They appear at the top of the pool order list presented in the RealPresence Resource Manager system.
- Users of that system will understand that they should choose one of those pool orders.

If the RealPresence Resource Manager system is also going to be used to directly schedule conferences on MCUs, those MCUs should not be part of the conferencing resources (MCU pools) available to the RealPresence DMA system.

The following table describes the fields in the list.

Column	Description
Priority	Priority ranking of the pool order.
Name	Name of the pool order.
Description	Brief description of the pool order.

Column	Description
MCU Pools	The MCU pools that are in the pool order.
Fallback	Indicates whether this pool order is set to fall back to any available MCU if there are no available MCUs in its pools.

The **Actions** list associated with the **MCU Pool Orders** list contains the items in the following table.

Command	Description
Add	Opens the **Add MCU Pool Order** dialog box, where you can define a new pool order.
Edit	Opens the **Edit MCU Pool Order** dialog box for the selected pool order, where you can change its name, description, the MCU pools it includes, and their priority order.
Delete	Removes the selected MCU pool order from the list of pool orders that are available. A dialog box asks you to confirm.
Move Up	Increases the priority ranking of the selected pool order.
Move Down	Decreases the priority ranking of the selected pool order.

See also:

Add MCU Pool Order Dialog Box on page 146
Edit MCU Pool Order Dialog Box on page 147
MCU Selection Process on page 147
MCU Availability and Reliability Tracking on page 148
MCU Pool Order Procedures on page 150
Enterprise Groups Procedures on page 329

Add MCU Pool Order Dialog Box

Lets you define a new MCU pool order in the RealPresence DMA system. The following table describes the fields in the dialog box.

Field	Description
Name	Name of the MCU pool order.
Description	Brief description of the pool order.
Available MCU pools	Lists the MCU pools available to the system.
Selected MCU pools	Lists the pools included in the pool order in their priority order. The left/right arrow buttons move pools in and out of the list. The up/down arrow buttons change the priority rankings of the pools.
Fall back to any available MCU	Indicates whether this pool order is set to fall back to any available MCU if there are no available MCUs in its pools.

See also:

MCU Pool Orders on page 145

MCU Pool Order Procedures on page 150

Edit MCU Pool Order Dialog Box

Lets you edit an MCU pool order. The following table describes the fields in the dialog box.

Field	Description
Name	Name of the MCU pool order.
Description	Brief description of the pool order.
Available MCU pools	Lists the MCU pools available to the Polycom RealPresence DMA system.
Selected MCU pools	Lists the pools included in the pool order in their priority order. The left/right arrow buttons move pools from one list to the other. The up/down arrow buttons change the priority rank of the selected pool.
Fall back to any available MCU	Indicates whether this pool order is set to fall back to any available MCU if there are no available MCUs in its pools.

See also:

MCU Pool Orders on page 145

MCU Pool Order Procedures on page 150

MCU Selection Process

Note: MCUs and ISDN Gateway Selection

MCU pools and pool orders are not used to select an ISDN gateway for simplified gateway dialing. See ISDN Gateway Selection Process on page 139.

The process below can be affected by the mechanisms that the system uses for detecting and handling MCU availability and reliability issues. See MCU Availability and Reliability Tracking on page 148.

The Polycom RealPresence DMA system chooses an MCU for a user's conference by applying the following rules in order:

1. Select the MCU pool order:
   a. Use the pool order directly assigned to the user's conference room.
   b. If none, use the highest priority pool order associated with any group to which the user belongs.
   c. If none, use the system default.
2. Select the first MCU pool in the MCU pool order.
3. Select the best MCU in the MCU pool, based on how well their capabilities fulfill the user's needs in the following respects:
   - MCU has RealPresence Collaboration Server or RMX profile required by user's conference template.

- MCU has IVR service required by user's conference template.
- MCU has recording capability required by user's conference template.

If there are multiple MCUs that are equally capable, select the least used, as determined by the following formula:

```
port_availability = (free_video_ports / total_video_ports) + (0.0001 *
free_audio_ports / total_audio_ports)
```

```
mixer_availability = (total_video_ports - 2 * active_dma_conferences) /
total_video_ports + 0.0001 * (total_audio_ports - 2 * active_dma_conferences) /
total_audio_ports
```

```
availability = min (port_availability, mixer_availability)
```

4 If no MCUs in the selected MCU pool have capacity, select the next MCU pool in the pool order and return to step 3.

5 If no MCUs are available in any of the MCU pools in the pool order:

- If fallback is enabled, select the best MCU available to the Polycom RealPresence DMA system, based on the system's capability algorithm.
- If fallback is not enabled, reject the call.

Note: Certain Conference Options Affect MCU Selection

- On the **Admin > Conference Manager > Conference Settings** page, when the **MCU Selection** field is set to **Prefer MCU in first caller's site**, the system will match the MCU chosen for the call with the site that the first caller's endpoint belongs to.
- On the Admin > Conference Manager > Conference Templates page, under the **Add/Edit Conference template > RMX General Settings** dialog, the **Cascade for Size** option enables conferences using this template to span Polycom MCUs to achieve conference sizes larger than a single MCU can accommodate.

If **Cascade for Size** is enabled and the **MCU Selection** field is set to **Prefer MCU in first caller's site**, the rules for **Cascade for size** take precedence over the rules for **Prefer MCU in first caller's site** during MCU selection. This is because if a conference starts on an MCU with insufficient ports reserved for **Cascade for size**, then that conference will never cascade.

See also:

MCU Pool Orders on page 145

MCU Pool Order Procedures on page 150

MCU Availability and Reliability Tracking

In order to minimize the number of failed calls, the Polycom RealPresence DMA system employs mechanisms for detecting and handling MCU availability and reliability issues:

- If it can't reach an MCU's management interface, the RealPresence DMA system won't route calls to that MCU.
- If an MCU reports zero capacity via its management interface, the RealPresence DMA system won't route calls to that MCU.

- When calls to a specific MCU fail, the RealPresence DMA system reduces the MCU's reliability score, causing it to be selected less frequently than other MCUs.

  An MCU's reliability depends on the number of consecutive failed calls. As that number increases, the RealPresence DMA system treats a growing percentage of the MCU's ports as if they were in use. Since the RealPresence DMA system selects the least used of the capable MCUs in its pool, the likelihood that an MCU with failures will be chosen for the next call declines rapidly (depending on the number of consecutive failed calls and the remaining capacity in the MCU pool).

Consecutive Failed Calls	Percentage of Ports Assumed To Be in Use
1	24%
2	43%
3	56%
4	67%
5	74%
6	80%
7	84%
8	88%
9	90%

Every 30 minutes, the reliability score of the MCU is increased so that it won't be permanently removed from the pool due to failures in the distant past. To avoid trying the MCU every 30 minutes, monitor the RealPresence DMA system and administratively take the MCU out of service.

By increasing the number of MCUs in the pool or increasing their capacity, you can decrease the usage of the working MCUs during a failover scenario. So, for example, if you want to avoid routing any more calls to an MCU after two consecutive failed calls, provide enough excess capacity that the remaining MCUs never all reach 43% port usage during a failure.

Note: Calculating MCU Reliability

After each call, the RealPresence DMA system recalculates the reliability of an MCU as the weighted average of the result for the current call (1 for success, 0 for failure) and the reliability of all previous calls, using this formula:

```
reliability = (current_call + (weight * previous_reliability)) / (1 + weight)
```

For example, if weight is 5, previous reliability is 1 (no previous failed calls), and the call is successful, the reliability remains 1:

```
(1 + (5 *1)) / (1 + 5) = 1
```

If weight is 5, previous reliability is 1, and the call fails, the reliability becomes 5/6:

```
(0 + (5 *1)) / (1 + 5) = 5/6
```

If weight is 5, previous reliability is 5/6, and the call is successful, the reliability becomes 31/36:

```
(1 + (5 *5/6)) / (1 + 5) = 31/36
```

If the reliability is ever less than 1, it exponentially approaches 1 as more calls succeed, but it never quite gets there. It very quickly reaches the point where the weight of the past failed call counts less than a single call in progress. But it remains as the tie breaker between completely unused MCUs forever.

See also:

MCU Pool Orders on page 145

MCU Selection Process on page 147

MCU Pool Order Procedures on page 150

MCU Pool Order Procedures

To view the MCU Pool Orders list

» Go to **Network > MCU > MCU Pool Orders**.

The **MCU Pool Orders** list appears.

To add an MCU Pool Order

1. Go to **Network > MCU > MCU Pool Orders**.
2. In the **Actions** list, click **Add**.
3. In the **Add MCU Pool** dialog box, complete editable fields. All are mandatory. See Add MCU Pool Dialog Box on page 143.
4. Click **OK**.

   The new MCU pool order appears in the **MCU Pool Orders** list. The MCU pools included in the pool order are displayed.

To edit an MCU Pool Order

1. Go to **Network > MCU > MCU Pool Orders**.
2. In the **MCU Pool Orders** list, select the pool order, and in the **Actions** list, click **Edit**.

3 In the **Edit MCU Pool Order** dialog box, edit the fields as required. See Edit MCU Pool Dialog Box on page 143.

4 Click **OK**.

The changes you made appear in the **MCU Pool Orders** list.

To delete an MCU Pool Order

1 Go to **Network > MCU > MCU Pool Orders**.

2 In the **MCU Pool Orders** list, select the pool order, and in the **Actions** list, select **Delete**.

3 When asked to confirm that you want to delete the selected MCU, click **Yes**.

See also:

MCU Pool Orders on page 145

Add MCU Pool Order Dialog Box on page 146

Edit MCU Pool Order Dialog Box on page 147

Integrations with Other Systems

This chapter describes the following Polycom® RealPresence® Distributed Media Application™ (DMA®) 7000 system configuration topics related to integrating the system with external systems:

- Microsoft Active Directory® Integration
- Microsoft Lync 2013 Integration
- Microsoft Exchange Server Integration
- Resource Management System Integration
- Juniper Networks SRC Integration

Microsoft Active Directory® Integration

When you integrate the Polycom RealPresence DMA system with your Microsoft® Active Directory®, the enterprise users (Active Directory members) become Conferencing Users in the Polycom RealPresence DMA system. Each enterprise user is (optionally) assigned a conference room, or virtual meeting room (VMR). The conference room IDs are typically generated from the enterprise users' phone numbers.

Once integrated with Active Directory, the Polycom RealPresence DMA system accesses the directory under the following circumstances:

- Nightly, to update the user and group information in its cache.
- Whenever you force a cache refresh using the **Update** button.
- To authenticate login passwords.
- To create or delete Polycom conference contacts whenever a publishable VMR is created or deleted (only if the RealPresence DMA system is integrated with Microsoft Lync 2013 and contact creation is enabled).

In a superclustered environment, one cluster is responsible for integrating with Active Directory and updating the cache daily, and the cache is available to all clusters through the replicated shared data store. The other clusters connect to Active Directory only to authenticate user credentials.

Note: Polycom Solution and Integration Support

Polycom Implementation and Maintenance services provide support for Polycom solution components only. Additional services for supported third-party Unified Communications (UC) environments integrated with Polycom solutions are available from Polycom Global Services, and its certified Partners, to help customers successfully design, deploy, optimize, and manage Polycom visual communication within their third-party UC environments.

UC Professional Services for Microsoft Integration is mandatory for Polycom Conferencing for Microsoft Outlook and Microsoft Lync Server or Office Communications Server integrations. Please see http://www.polycom.com/services/professional_services/index.html or contact your local Polycom representative for more information.

If the Active Directory is on Windows Server 2008 R2 and AD integration fails, see http://support.microsoft.com/kb/977180.

See also:

Microsoft Active Directory Page on page 153
Active Directory Integration Procedure on page 157
Understanding Base DN on page 160
Adding Passcodes for Enterprise Users on page 162
About the System's Directory Queries on page 163
Active Directory Integration Report on page 409
Conference Room Errors Report on page 412
Groups on page 325
Enterprise Groups Procedures on page 329

Microsoft Active Directory Page

The following table describes the fields on the **Microsoft Active Directory** page.

Field	Description
Enable integration with Microsoft Active Directory® Server	Enables the Active Directory integration fields and the **Update** button, which initiates a connection to the Microsoft Active Directory.
Connection Status	
<server name and icons>	The Polycom RealPresence DMA system server(s) and one or more of the following status icons for each:  Warning – Appears only if an error has occurred. Hover over it to see a description of the problem or problems.  Connected – This is real-time status. The system connects to the Active Directory every 5 seconds while this page is displayed.  Disconnected – The system either isn't integrated with Active Directory or is unable to connect.  Encrypted – Appears only if the connection to the directory is encrypted.
Status	**OK** indicates that the server successfully connected to the Active Directory. If it didn't, an error message appears. If you're an administrator, this label is a link to the Active Directory Integration Report.
User and group cache	Shows the state of the server's cache of directory data and when it was last updated.
Total users/rooms	Number of enterprise users and enterprise conference rooms in the cache. The difference between the two, if any, is the number of conference room errors. **Note:** If you don't specify an Active Directory attribute for conference room ID generation, the number of rooms is zero.

Field	Description
Conference room errors	Number of enterprise users for whom conference rooms couldn't be generated. If you're an administrator, this label is a link to the Conference Room Errors Report report. **Note:** If you don't specify an Active Directory attribute for conference room ID generation, the number of errors equals the number of users.
Orphaned users/groups	Number of orphaned users and groups (that is, users and groups that are disabled or no longer in the directory, but for whom the system contains data). If you're an administrator, this label is a link to the Orphaned Groups and Users Report.
Enterprise passcode errors	Number of enterprise users for whom passcodes were generated that aren't valid. If you're an administrator, this label is a link to the Enterprise Passcode Errors Report.
Active Directory Connection	
Auto-discover from FQDN	If this option is selected, the system uses serverless bind to find the closest global catalog servers. Enter the DNS domain name. We strongly recommend using this option. If the system can't determine the site to which it belongs, it tries to connect to any global catalog server. If that fails, it uses the entered DNS domain name as a host name and continues as if the **IP address or host name** option were selected. If this option is checked, the system attempts to connect to the Active Directory as follows: **1** It looks up the LDAP servers for the DNS domain (using `DNS SRV: _ldap._tcp.`*<domain-name>*). **2** It LDAP-pings every returned LDAP server until one responds with the system's client site name. **3** It looks up the global catalog servers for the site (using `DNS SRV: _gc._tcp.`*<site-name>*`._sites.`*<domain-name>*). **4** It tries to connect to the global catalog servers. **5** If it can't connect, it tries other global catalog servers from the forest. **6** If it still can't connect, it uses the DNS domain name (using `DNS A:` *<domain-name>*) and connects to it. Step 6 is the system behavior if this option isn't checked. The system's Network Settings setup must have at least one domain name server specified. Check the Active Directory Integration Report to see whether serverless bind succeeded and what the site name is.

Field	Description
IP address or host name	If this option is selected, the system attempts to connect to the Microsoft Active Directory domain controller specified. For a single-domain forest, enter the host name or IP address of a domain controller. For a multi-domain forest, we don't recommend using this option. If you must, enter the host name or IP address of a specific global catalog server, not the DNS domain name. The Polycom RealPresence DMA system can only integrate with one forest. A special "Exchange forest" (in which all users are disabled) won't work because the system doesn't support conferencing for disabled users.
Domain\user name	LDAP service account user ID for system access to the Active Directory. Must be set up in the Active Directory, but should not have Windows login privileges. **Note:** If you use Active Directory attributes that aren't replicated across the enterprise via the Global Catalog server mechanism, the system must query each domain for the data. Make sure that this service account can connect to all the LDAP servers in each domain. The Polycom RealPresence DMA system initially assigns the Administrator user role to this user (see User Roles Overview on page 301), so you can use this account to give administrative access to other enterprise user accounts. **Caution:** Leaving a user role assigned to this account represents a ***serious security risk.*** For best security, remove the Administrator user role and mark this account disabled in the Polycom RealPresence DMA system (not the Active Directory) so that it can't be used for conferencing or for logging into the Polycom RealPresence DMA system management interface.
Password	Login password for service account user ID.
User LDAP filter	Specifies which user accounts to include (an underlying, non-editable filter excludes all non-user objects in the directory). The default expression includes all users that don't have a status of disabled in the directory. Don't edit this expression unless you understand LDAP filter syntax. See RFC 2254 for syntax information.
Base DN	Can be used to restrict the Polycom RealPresence DMA system to work with a subset of the Active Directory (such as one tree of multiple trees, a subtree, or a domain). Leave the default setting, All Domains, initially. See Understanding Base DN on page 160.
Time of day to refresh cache	Time at which the Polycom RealPresence DMA system should log into the directory server(s) and update its cache of user and group data.
Territory	Specifies the territory whose Polycom RealPresence DMA system cluster is responsible for updating the user and group data cache. In a superclustered system, this information is shared across the supercluster. The other clusters access the directory only to authenticate passwords. See Territories on page 294 for more information.

Field	Description
Enterprise Conference Room ID Generation	
Directory attribute	The name of the Active Directory attribute from which the Polycom RealPresence DMA system should derive conference room IDs (virtual meeting room numbers). Generally, organizations use a phone number field for this. The attribute must be in the Active Directory schema and preferably should be replicated across the enterprise via the Global Catalog server mechanism. But if the attribute isn't in the Global Catalog, the system queries each domain controller for the data. Leave this field blank if you don't want the system to create conference rooms for the enterprise users.
Characters to remove	Characters that might need to be stripped from a phone number field's value to ensure a numeric conference room ID. The default string includes **\t**, which represents the tab character. Use **** to remove backslash characters. If generating alphanumeric conference room IDs, remove the following: `()&%#@|"':;,` Single spaces in the source field are preserved, but multiple consecutive spaces are concatenated to one space.
Maximum characters used	Desired length of conference room IDs. The Polycom RealPresence DMA system strips excess characters from the beginning, not the end. If you specify 7, the room IDs will contain the last 7 valid characters from the Active Directory attribute being used.
Enterprise Chairperson and Conference Passcode Generation	
Chairperson directory attribute	The name of the Active Directory attribute that contains the chairperson passcodes. In choosing an attribute, remember that passcodes must be numeric. The attribute must be in the Active Directory schema and preferably should be replicated across the enterprise via the Global Catalog server mechanism. But if the attribute isn't in the Global Catalog, the system queries each domain controller for the data. Leave this field blank if you don't want the system to create chairperson passcodes for the enterprise users.
Maximum characters used	Desired length of chairperson passcodes. The Polycom RealPresence DMA system strips excess characters from the beginning, not the end. If you specify 7, the passcodes will contain the last 7 numeric characters from the Active Directory attribute being used.

Field	Description
Conference directory attribute	The name of the Active Directory attribute that contains the conference passcodes. In choosing an attribute, remember that passcodes must be numeric. The attribute must be in the Active Directory schema and preferably should be replicated across the enterprise via the Global Catalog server mechanism. But if the attribute isn't in the Global Catalog, the system queries each domain controller for the data. Leave this field blank if you don't want the system to create conference passcodes for the enterprise users.
Maximum characters used	Desired length of conference passcodes. The Polycom RealPresence DMA system strips excess characters from the beginning, not the end. If you specify 7, the passcodes will contain the last 7 numeric characters from the Active Directory attribute being used.

See also:

Microsoft Active Directory® Integration on page 152

Active Directory Integration Procedure

Before performing the procedure below, read Set Up Security on page 34 and Connect to Microsoft Active Directory® on page 36. You should also have a good idea of how many enterprise users you expect the system to retrieve.

Note: Active Directory must trust the RealPresence DMA system certificate
Unless the **Allow unencrypted connections to the Active Directory** security option is enabled, the RealPresence DMA system offers the same SSL server certificate that it offers to browsers connecting to the system management interface. The Microsoft Active Directory server must be configured to trust the certificate authority.

To integrate with Active Directory

1. In Windows Server, add the service account (read-only user account) that the Polycom RealPresence DMA system will use to read the Active Directory. Configure this account as follows:
   - User can't change password.
   - Password never expires.
   - User can only access services on the domain controllers and cannot log in anywhere.

   If you are integrating the RealPresence DMA system with Lync 2013 and plan to use the automatic conference contact creation feature, the service account you create here should have full permissions to add, change, and delete entries in the OU where the conference contacts are stored, along with full administrative permissions for Lync administration to manipulate these contacts.

Note: Active Directory Integration Accounts

If you have a Polycom RealPresence Resource Manager or CMA system, be aware that the machine account used for AD integration by the RealPresence Resource Manager or CMA system and the service account used for AD integration by the RealPresence DMA system have different requirements. Don't try to use the same account for both purposes. In particular, the whitelist of machines that the Polycom RealPresence Resource Manager or CMA system is allowed to log into should contain only the RealPresence Resource Manager or CMA system, while the whitelist of machines the Polycom RealPresence DMA system is allowed to log into should contain only the domain controllers.

If you use Active Directory attributes that aren't replicated across the enterprise via the Global Catalog server mechanism, the system must query each domain for the data. Make sure that the whitelist for this service account is correct and that it can connect to all the LDAP servers in each domain.

2 In the Polycom RealPresence DMA system, replace the default local administrative user with your own user account that has the same user roles. See Users Procedures on page 321.

3 Log into the Polycom RealPresence DMA system as the local user you created in step 2 and go to **Admin > Integrations > Microsoft Active Directory**.

4 Check **Enable integration with Microsoft® Active Directory Server** and complete the information in the **Active Directory Connection** section.

   a Unless you have a single domain environment and no global catalog, select **Auto-discover from FQDN** and enter the DNS domain name.

Note: Auto-Discover vs. IP Address

We don't recommend using the **IP address or host name** option in a multi-domain environment. If you must, enter the host name or IP address of a specific global catalog server, not the DNS domain name.

   b For **Domain\user name**, enter the domain and user ID of the account you created in step 1.

   c Leave **Base DN** set to the default, *All Domains*. Don't edit the **User LDAP filter** expression unless you understand LDAP filter syntax (see RFC 2254) and know what changes to make.

   d Specify the time each day that you want the Polycom RealPresence DMA system to check the Active Directory for changes.

   e Select the territory whose cluster should perform the integration and daily updates.

5 To generate conference room IDs for the enterprise users, complete the **Enterprise Conference Room ID Generation** section.

   Skip this step if you don't want the system to create conference rooms (virtual meeting rooms) for the enterprise users.

   a Specify the Active Directory attribute from which to generate room IDs.

   Your users will be happier if room IDs are numeric and not longer than necessary to ensure uniqueness. Phone numbers are the most likely choice, or maybe employee ID numbers.

   b If necessary, edit the contents of the **Characters to remove** field.

   If you use phone numbers, the default contents of this field should be adequate to ensure a numeric room ID.

c Specify the number of characters to use.

After the system strips out characters to remove, it removes characters in excess of this number from the beginning of the string.

Note: Save Passcode Generation for Later

Leave the **Enterprise Chairperson and Conference Passcode Generation** section alone for now. Once the system is integrated successfully, if you want to add passcode support, see Adding Passcodes for Enterprise Users on page 162.

6 Click **Update**.

After a short time, the system confirms that Active Directory configuration has been updated.

7 Note the time. Click **OK**.

8 To restrict the Polycom RealPresence DMA system to work with a subset of the Active Directory (such as one tree of multiple trees, a subtree, or a domain), repeat steps 4-6, selecting the value you want from those now available in the **Base DN** list. See Understanding Base DN on page 160.

9 Check the **Total users/rooms** and **Conference room errors** values. If the numbers are significantly different from what you expected, you'll need to investigate after you complete the next step (you must be logged in as an enterprise user to investigate further).

10 Set up your enterprise account and secure the service account:

a Log out and log back in using the service account you created in step 1.

You must be logged in with an Active Directory user account to see other enterprise users. The service account user ID specified in step 4b lets you do so initially.

b Go to **User > Users**, clear the **Local users only** check box, locate your named enterprise account, and give it Administrator privileges. See User Roles Overview on page 301 and Users Procedures on page 321.

c Log out and log back in using your named enterprise account.

d Secure the service account by removing all user roles and marking it disabled in the Polycom RealPresence DMA system (not in the Active Directory). See Edit User Dialog Box on page 307.

Caution: Disable the Service Account

Leaving user roles assigned to the service account represents a ***serious security risk.*** For best security, remove all user roles and mark this account disabled in the Polycom RealPresence DMA system (not the Active Directory) so that this account can't be used for conferencing or for logging into the Polycom RealPresence DMA system management interface.

11 If, in step 9, the **Total users/rooms** values were significantly different from what you expected, try to determine the reason and fix it:

a Go to **User > Users** and perform some searches to determine which enterprise users are available and which aren't.

b If there are many missing or incorrect users, consider whether changes to the LDAP filter can correct the problem or if there is an issue with the directory integration configuration chosen.

Note: LDAP Familiarity

If you're not familiar with LDAP filter syntax (as defined in RFC 2254) and knowledgeable about enterprise directories in general and your specific implementation in particular, please consult with someone who is.

12 If, in step 9, there were many conference room errors, try to determine the reason and fix it:

   a Go to **Reports > Conference Room Errors** and verify that the time on the report is after the time when you last completed step 7.

   b Review the list of duplicate and invalid conference room IDs. Consider whether using a different Active Directory attribute, increasing the conference room ID length, or editing the characters to remove will resolve the majority of problems.

   If there are only a few problems, they can generally be resolved by correcting invalid Active Directory entries.

13 If necessary, repeat steps 4-9 and steps 11 and/or 12, modifying the integration parameters as needed, until you get a satisfactory result.

See also:

Microsoft Active Directory® Integration on page 152

Adding Passcodes for Enterprise Users on page 162

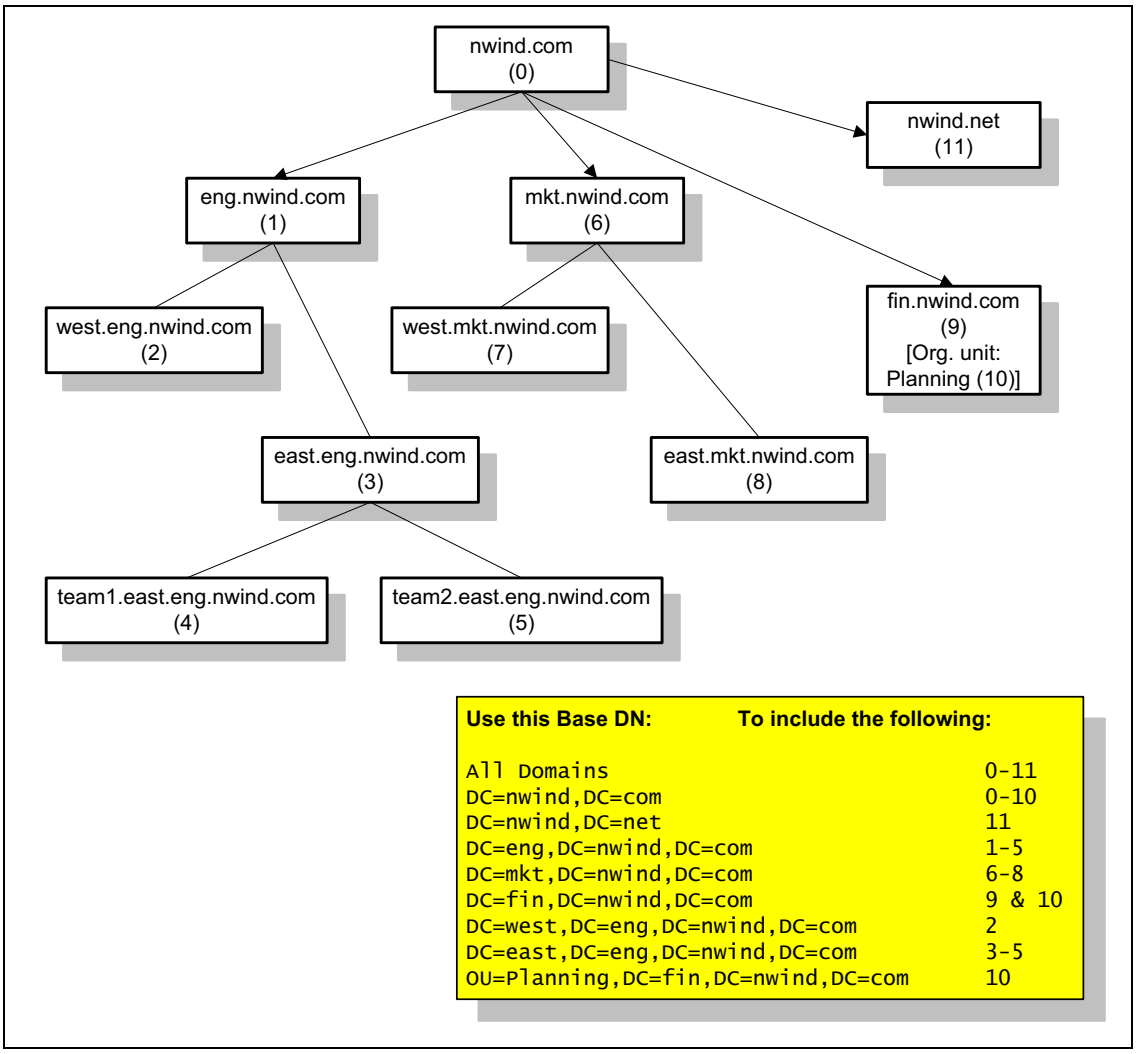
Active Directory Integration Report on page 409

Conference Room Errors Report on page 412

Understanding Base DN

The **Base DN** field is where you can specify the *distinguished name* (DN) of a subset of the Active Directory hierarchy (a domain, subset of domains, or organizational unit) to which you want to restrict the Polycom RealPresence DMA system. It acts like a filter.

The diagram below illustrates how choosing different Base DN values affects which parts of a forest are included in the directory integration.



The **Base DN** field defaults to *All Domains* (which is equivalent to specifying an empty base DN in a query). Initially, the only other option is to enter a custom DN value. The first time you tell the system to connect to the Active Directory server, leave **Base DN** set to *All Domains*.

After the system has successfully connected to the Active Directory, the list contains entries for each domain in the AD forest. If you want to restrict the system to a subset of the Active Directory (such as one tree of multiple trees, a subtree, a domain, or an organizational unit), select the corresponding base DN entry from the list.

See also:

Microsoft Active Directory® Integration on page 152

Active Directory Integration Procedure on page 157

About the System's Directory Queries on page 163

Adding Passcodes for Enterprise Users

Polycom RMX and RealPresence Collaboration Server MCUs provide two optional security features for conferences, which the Polycom RealPresence DMA system fully supports:

- Conference Passcode — A numeric passcode that callers must enter in order to join the conference.
- Chairperson Passcode — A numeric passcode that callers can enter to identify themselves as conference chairpersons. Chairpersons have additional privileges, such as controlling recording. A conference can be configured to not start until a chairperson joins and to end when the last chairperson leaves (see Add Conference Template Dialog Box on page 196).

Note: Cisco Codian MCUs and Passcodes

If Cisco Codian MCUs are included in the Polycom RealPresence DMA system's pool of conferencing resources, don't assign a chairperson passcode without also assigning a conference passcode. If a conference with only one passcode (either chairperson or conference) lands on a Codian MCU, all callers to the conference must enter that passcode.

If the Polycom RealPresence DMA system is integrated with your Active Directory, conference and chairperson passcodes for enterprise users can be maintained in the Active Directory.

You must determine which Active Directory attributes to use for the purpose and provide a process for provisioning users with those passcodes. If a user's passcode Active Directory attribute (either conference or chairperson) is left empty, the user's conferences won't require that passcode.

Passcodes must consist of numeric characters only (the digits 0-9). You can specify the maximum length for each passcode type (up to 16 digits). A user's conference and chairperson passcodes can't be the same.

When you generate passcodes for enterprise users, the Polycom RealPresence DMA system retrieves the values in the designated Active Directory attributes and removes any non-numeric characters from them. If the resulting numeric passcode is longer than the maximum for that passcode type, it strips the excess characters from the beginning of the string.

To generate chairperson and conference passcodes for enterprise users

1. In the Active Directory, select an unused attribute to be used for each of the passcodes.

   In a multi-domain forest, it's best to choose attributes that are replicated across the enterprise via the Global Catalog server mechanism. But if the attributes you select aren't available in the Global Catalog, the system can read them directly from each domain.

Note: Conference Passcode Selection

You can use an existing attribute that contains numeric data, such as an employee ID. This may not provide much security, but might be sufficient for conference passcodes.

2. In the Active Directory, either provision users with passcodes or establish a mechanism for letting users create and maintain their own passcodes.

   Consult your Active Directory administrator for assistance with this.
3. On the Polycom RealPresence DMA system, go to **Admin > Integrations > Microsoft Active Directory**.
4. Complete the **Enterprise Chairperson and Conference Passcode Generation** section.
   a. Specify the Active Directory attribute from which to generate chairperson passcodes and the number of characters to use.

   b Specify the Active Directory attribute from which to generate conference passcodes and the number of characters to use.

5. Click **Update**.

   After a short time, the system confirms that Active Directory configuration has been updated.

6. Note the time. Click **OK**.

7. Confirm that passcode generation worked as expected.

   a Go to **Reports > Enterprise Passcode Errors** and verify that the time on the report is after the time when you last completed step 6.

   b Review the number of valid, invalid, and unassigned passcodes.

   If there are only a few problems, they can generally be resolved by correcting invalid Active Directory entries.

Note: Invalid Passcodes

Unless users have already been provisioned with passcodes in your Active Directory or you're using an existing attribute, most users will probably not have passcodes assigned.

Duplicate and invalid passcodes should be your main concern because they could indicate a problem with the type of data in the selected attributes or with the number of characters you elected to use.

See also:

Microsoft Active Directory® Integration on page 152

Microsoft Active Directory Page on page 153

Active Directory Integration Procedure on page 157

Active Directory Integration Report on page 409

About the System's Directory Queries

The Polycom RealPresence DMA system uses the following subtree scope LDAP queries. In a standard AD configuration, all these queries use indexes.

- User Search
- Group Search
- Global Group Membership Search
- Attribute Replication Search
- Configurable Attribute Domain Search
- Domain Search
- Service Account Search

The system runs the first three queries every time it creates or updates its cache:

- When you click **Update** on the **Microsoft Active Directory** page
- When the system restarts (if integrated with the Active Directory)
- At the scheduled daily cache refresh time

The elements in italics are examples. The actual values of these variables depend on your configuration.

User Search

This search queries the global catalog. In a standard AD configuration, all the filter attributes and attributes returned are replicated to the global catalog.

- Base: <*empty*>

  The base variable depends on the **Base DN** setting on the **Microsoft Active Directory** page. If it's set to the default, *All Domains*, the base variable is empty, as shown. Otherwise, the base variable is the same as **Base DN**. See Understanding Base DN on page 160.

- Filter: `(&(objectCategory=person)(UserAccountControl:1.2.840.113556.1.4.803:=512)(sAMAccountName=*)(!(userAccountControl:1.2.840.113556.1.4.803:=2))`

  The filter variable depends on the **User LDAP filter** setting. See Microsoft Active Directory® Integration on page 152.

- Index used: `idx_objectCategory:32561:N`

  The search used this index in our testing environment, using a standard AD configuration (no indexes added). Results may be different for a different configuration, especially a different **User LDAP filter** setting.

- Attributes returned: `sAMAccountName, userAccountControl, givenName, sn, [`*telephoneNumber*`], [`*chairpasscode*`], [`*confpasscode*`]`

  The three attributes returned variables (in square brackets) are returned only if you specify the corresponding Active Directory attributes (for generating conference room IDs, chairperson passcodes, and conference passcodes, respectively) and if the Attribute Replication Search determined that the attributes are replicated to the global catalog.

  See Microsoft Active Directory® Integration on page 152 and Adding Passcodes for Enterprise Users on page 162.

Group Search

This search queries the global catalog. In a standard AD configuration, all the filter attributes and attributes returned are replicated to the global catalog.

- Base: <*empty*>

  The base variable depends on the **Base DN** setting on the **Microsoft Active Directory** page. If it's set to the default, *All Domains*, the base variable is empty, as shown. Otherwise, the base variable is the same as **Base DN**. See Understanding Base DN on page 160.

- Filter: `(&(objectClass=group)(|(groupType=-2147483640)(groupType=-2147483646)))`

- Indexes used: `idx_groupType:6675:N;idx_groupType:11:N`

  The search used these indexes in our testing environment, using a standard AD configuration (no indexes added). Results may be different for a different configuration.

- Attributes returned: `cn, description, sAMAccountName, groupType, member`

Global Group Membership Search

This search queries LDAP.

- Base: *DC=dma,DC=eng,DC=local*

  The base variable depends on the **Base DN** setting on the **Microsoft Active Directory** page. If it's set to the default, *All Domains*, the base variable is the domain DN, as shown by the example. Otherwise, the base variable is the same as **Base DN**. See Understanding Base DN on page 160.
- Filter: `(&(objectClass=group)(groupType=-2147483646))`
- Index used: `idx_groupType:6664:N`

  The search used this index in our testing environment, using a standard AD configuration (no indexes added). Results may be different for a different configuration.
- Attributes returned: `member`

Attribute Replication Search

This search queries LDAP.

The system runs this query when it restarts (if already integrated with the Active Directory) and when you click the **Update** button on the **Microsoft Active Directory** page, but only if one or more of the configurable Active Directory attributes (for generating conference room IDs, chairperson passcodes, and conference passcodes) is specified.

The purpose of this query is simply to determine if those Active Directory attributes are replicated to the global catalog. If they are, the User Search retrieves them. If any of them isn't, the system uses the Configurable Attribute Domain Search to retrieve the data from each domain controller.

- Base: `CN=Schema,CN=Configuration,`*DC=dma,DC=eng,DC=local*

  The base variable depends on the forest root.
- Filter: `(&(lDAPDisplayName=`*telephoneNumber*`)(lDAPDisplayName=`*chairpasscode*`)(lDAPDisplayName=`*confpasscode*`))`

  The filter variables depend on the configurable Active Directory attributes specified in the **Enterprise Conference Room ID Generation** and **Enterprise Chairperson and Conference Passcode Generation** sections (any of these that's empty is omitted from the filter).
- Indexes used: `idx_lDAPDisplayName:3:N;idx_lDAPDisplayName:2:N; idx_lDAPDisplayName:1:N`

  The search used these indexes in our testing environment, using a standard AD configuration (no indexes added). Results may be different for a different configuration.
- Attributes returned: `lDAPDisplayName, isMemberOfPartialAttributeSet`

Configurable Attribute Domain Search

This search queries LDAP.

The system runs this query only if the Attribute Replication Search determined that one or more of the configurable Active Directory attributes that it needs to retrieve (for generating conference room IDs, chairperson passcodes, and conference passcodes) isn't in the global catalog. In that case, it uses this query to retrieve the data from each domain controller.

- Base: *DC=dma,DC=eng,DC=local*

  The base variable depends on the domain name being queried.
- Filter: same as in User Search
- Index used: same as in User Search
- Attributes returned: `sAMAccountName`, attribute(s) not in global catalog

Domain Search

This search queries LDAP.

The system runs this query only when it restarts (if already integrated with the Active Directory) and when you click the **Update** button on the **Microsoft Active Directory** page.

- Base: `CN=Configuration,DC=dma,DC=eng,DC=local`

  The base variable depends on the forest root DN (the distinguished name of the Active Directory forest root domain). See Active Directory Integration Report on page 409.

- Filter: `(&(objectCategory=crossRef)(systemFlags=3))`
- Indexes used: `idx_objectCategory:11:N`

  The search used these indexes in our testing environment, using a standard AD configuration (no indexes added). Results may be different for a different configuration.

- Attributes returned: `cn, dnsRoot, nCName`

Service Account Search

This search queries the global catalog. In a standard AD configuration, all the filter attributes and attributes returned are replicated to the global catalog.

The system runs this query only when you click the **Update** button on the **Microsoft Active Directory** page. It validates the service account ID.

- Base: *<empty>*

  The base variable depends on the **Base DN** setting on the **Microsoft Active Directory** page. If it's set to the default, *All Domains*, the base variable is empty, as shown. Otherwise, the base variable is the same as **Base DN**. See Understanding Base DN on page 160.

- Filter: `(&(objectCategory=person)(UserAccountControl:1.2.840.113556.1.4.803:=512)(sAMAccountName=*)(&(!(userAccountControl:1.2.840.113556.1.4.803:=2))(sAMAccountName=<userID>)))`

  The first filter variable depends on the **User LDAP filter** setting. See Microsoft Active Directory® Integration on page 152. The second variable depends on the value entered in the **Service account ID** field on the **Microsoft Active Directory** page. See Microsoft Active Directory® Integration on page 152.

- Index used: `idx_objectCategory:32561:N`

  The search used this index in our testing environment, using a standard AD configuration (no indexes added). Results may be different for a different configuration, especially a different **User LDAP filter** setting.

- Attributes returned: `sAMAccountName, userAccountControl, givenName, sn`

See also:

Microsoft Active Directory® Integration on page 152

Microsoft Active Directory Page on page 153

Active Directory Integration Procedure on page 157

Understanding Base DN on page 160

Microsoft Lync 2013 Integration

The RealPresence DMA system allows you to integrate with Microsoft® Lync 2013 Standard Edition and Enterprise Edition environments. When you integrate the RealPresence DMA system into a Lync 2013 environment, the system communicates with the Lync servers and Active Directory to provide contact presence and conference interaction between MCUs managed by the RealPresence DMA system and the Lync AVMCU. Presence allows Lync 2013 clients to view the presence of a RealPresence DMA system VMR, similar to any other contact in the Lync 2013 client contact list.

Note: VMRs and Polycom Conference Contacts

Throughout this guide, the term “Polycom conference contact” is used to refer to an Active Directory contact that corresponds with a VMR on the RealPresence DMA system and allows Lync presence status to be published for that VMR. You can configure the RealPresence DMA system to create and delete Polycom conference contacts automatically.

Callers can also connect to a conference containing a mixture of Lync clients and other endpoints.

Lync 2010 vs. Lync 2013 Integration

The RealPresence DMA system can interact with both Lync 2010 and Lync 2013 environments. However, there are several important differences between interacting with a Lync 2010 environment and full integration with a Lync 2013 environment. When Lync 2010 clients call in to the RealPresence DMA system, they connect to a conference as any other SIP endpoint would and are hosted on an MCU managed by the RealPresence DMA system. When the RealPresence DMA system is integrated with Lync 2013, Lync clients that connect to RealPresence DMA system VMRs may be hosted on the Lync AVMCU, and can be part of RealPresence DMA system conferences via a cascade link that the Polycom MCU creates with the AVMCU.

Integration also allows a non-Lync client to connect to a Lync 2013 scheduled conference by dialing the Lync conference ID included in the Microsoft Outlook meeting invitation. The RealPresence DMA system receives the connection attempt, creates a matching VMR automatically, and builds a cascade link between a Polycom MCU and the Lync AVMCU.

If the RealPresence DMA system loses connection with the Lync server, it retries in five minute intervals to reconnect, alerting the administrator of the outage.

Scheduled Conferences

Once you integrate your system with Lync 2013 environment, registered endpoints can call through the RealPresence DMA system and join conferences that have been scheduled with Microsoft Outlook. The Polycom Conferencing for Outlook (PCO) plugin is not needed for this call scenario.

Note: Scheduled Conferences require Polycom MCUs

Scheduled conference scenarios require that the RealPresence DMA system manage at least one Polycom MCU that supports Lync 2013. Non-Polycom MCUs are not supported.

You can configure the Outlook meeting invitation to include Lync conference IDs in meeting invitations as plain text, in addition to the automatically included “Join Lync Meeting” hypertext link. When they receive the invitation, users of Lync clients can click the link, and users of non-Lync endpoints can dial the plain-text Lync conference ID.

When non-Lync endpoints dial the meeting ID in the meeting invitation, the incoming call is acted on by the **Dial by Lync Conference ID** dial rule. This dial rule causes the RealPresence DMA system to search any configured and selected SIP peers for a matching Lync conference. If the conference ID isn't resolved on a Lync server, the system continues to resolve the conference ID using the next dial rule in the list. If the conference ID is resolved on a Lync server, the hosting Lync server gives the RealPresence DMA system information about the conference in question. The RealPresence DMA system dynamically creates a VMR and starts a conference on a Lync-capable MCU, passing the Lync conference information to the MCU. The MCU builds a cascade link between the newly created conference and the conference hosted on the Lync AVMCU. Lync clients and non-Lync endpoints can now interact in the conference.

Automatic Contact Creation and Configuration

You can configure the RealPresence DMA system to create and manage a corresponding Polycom conference contact in Active Directory whenever users create a new VMR. The RealPresence DMA system communicates with the Lync server to ensure the new contact it is enabled for Lync functionality. This allows the system to publish presence updates to the conference contact; Lync clients display a status of Available, Busy, or Offline for the conference contact in the client's contact list.

Note: Lync client contact creation delay
When you manually or automatically create a VMR or group of VMRs, allow up to 10 minutes for the newly created conference contact(s) to appear in the Lync client contact list.

Note: Required permissions for Active Directory service account
If you are integrating the RealPresence DMA system with Lync 2013 and plan to use the automatic conference contact creation feature, note that the required Active Directory service account permissions have changed from previous releases. The service account should have full permissions to add, change, and delete entries in the OU where the conference contacts are stored, along with full administrative permissions for Lync administration to manipulate these contacts.

Lync and non-Lync Endpoint Collaboration

Callers with Lync clients and non-Lync endpoints can join the same conference in several ways. See the Microsoft Lync documentation for more details on specific call flows.

- Users of Lync 2013 clients can select a Polycom conference contact in the contact list and drag it to an ongoing Lync 2013 conversation window, starting a video call.
- Users of Lync 2013 clients can start a Lync conference by selecting the ▾ (**Show Menu**) icon and choosing **Meet Now**. After starting the conference, users can invite more attendees to the conference or drag a Polycom conference contact into the conversation window to add the participant.
- Users of Lync clients can right-click a Polycom conference contact in the contact list and choose **Start a video call**.
- Users of Lync clients and other endpoints can use a Microsoft Outlook meeting invitation to connect to a Lync conference. Non-Lync endpoints can dial the included conference ID, and Lync clients can click the "Join Lync Meeting" link included in the invitation.

Note: Point to point calls between Polycom endpoints and Lync 2013 clients
When you register a Polycom endpoint to a RealPresence DMA system and make a point to point call to a Lync 2013 client, the conference may not have video because the H.261 and H.263 video codecs are not supported by the Lync 2013 client. As a workaround for Polycom HDX and RealPresence Group Series endpoints, register the endpoint to the Lync 2013 server before starting the conference. This workaround requires an RTV option key or Lync Interoperability License.

Considerations and Requirements for Lync 2013 Integration

- You need the following software versions (or later) to integrate a RealPresence DMA system with Lync 2013:
  - Microsoft Lync Server 2013
  - Polycom RealPresence DMA version 6.1
  - Polycom MCU software version 8.4
- The following Virtual Entry Queue (VEQ) call scenarios are not supported:
  - Calls to a Virtual Entry Queue (VEQ) from a Lync client
  - A non-Lync endpoint connecting to a VEQ and entering a Lync conference ID when prompted
- The Lync AVMCU doesn't support incoming calls dialed from a RealPresence DMA system VMR.
- **Conference mode** configurations of **SVC-only** and **Mixed AVC and SVC** are not supported in RealPresence DMA system and Lync 2013 cascaded conferences. Any conference that requires Lync AVMCU connectivity must use conference templates with **AVC only** as the configured **Conference mode**.
- You need Lync-capable Polycom MCUs to take advantage of MCU to AVMCU Smart Cascading functionality. Non-Polycom MCUs are not supported. If your Polycom MCU is Lync 2013 capable, the icon is displayed next to the MCU name on the **Network > MCU > MCUs** page. If no MCUs that support Lync 2013 are available, the cascaded conference won't start. Refer to your MCU documentation for more information.
- The Transfer Call feature of the Lync client is currently not supported when the MCU hosting the call is configured to use ICE or encryption.

Lync 2010 and 2013 Client / Server Feature Support

The following table outlines features that the RealPresence DMA system supports in Lync 2010 and Lync 2013 client and server environments.

Feature	Client	Server	Uses SVC cascading between Microsoft AVMCU and Polycom MCU	Comments
Scheduling - dial by Lync conference ID	Lync 2013	Lync 2013	Yes	
Multipoint Lync conferences invite a VMR	Lync 2013	Lync 2013	Yes	

Feature	Client	Server	Uses SVC cascading between Microsoft AVMCU and Polycom MCU	Comments
Meet Now calls to a VMR	Lync 2013	Lync 2013	Yes	
Escalated conferences - Lync client drag and drop multi-party call	Lync 2013	Lync 2013	Yes	
Direct point-to-point Lync call to a VMR	Lync 2010 Lync 2013	Lync 2010 Lync 2013	No	
DMA registered endpoint calling point to point to a Lync client	Lync 2010 Lync 2013	Lync 2010 Lync 2013	No	If a Lync 2013 client, all calls will be audio only.*
Lync client calling point to point to DMA registered endpoint	Lync 2010 Lync 2013	Lync 2010 Lync 2013	No	• Endpoints that don't support the SIP SDP multipart protocol will fail to join the call. • Some Polycom endpoints will join the call as audio only if dialed with a Lync 2013 client.*
Presence enabled VMRs	Lync 2013	Lync 2013	No	

* The Lync 2010 client supports the H.263 video codec, but the Lync 2013 client does not. See the note on page 169.

Integrate RealPresence DMA and Lync 2013

Before integrating, gather required information from your Lync 2013 system administrator. If you need the RealPresence DMA system to automatically create conference contacts in Active Directory, ensure that your RealPresence DMA system is integrated with Microsoft Active Directory before continuing. Refer to the *Polycom Unified Communications Deployment Guide for Microsoft Environments* for more information on the preliminary network, port, Lync server, and DNS configuration steps needed to prepare the RealPresence DMA system and your environment for integration with Lync 2013.

Required Information

You should gather the following information before beginning the integration process:

- The Fully Qualified Domain Name (FQDN) of the RealPresence DMA system
- The SIP domain for conference contacts (used in the **Contact SIP domain** field on the **Admin > Conference Manager > Conference Settings** page)
- The FQDN of or IP address of the Lync pool (used in the **Next hop address** field on the **Network > External SIP Peers > Add External SIP Peer** dialog)

- Unique name for the Lync Trusted Application (used when adding the RealPresence DMA system to the Lync topology)

The following procedures assume that you have gathered the required information and completed the preliminary setup tasks.

To integrate a RealPresence DMA system and Lync 2013:

1. Synchronize Lync Server and RealPresence DMA System Time
2. Enable Windows Remote Shell
3. Install Certificates for the Lync Server
4. Add the Lync Pool as an External SIP Peer
5. Enable the Dial by Lync Conference ID Dial Rule
6. Configure System-wide Presence and Contact Creation Settings
7. Add the RealPresence DMA System to the Lync Topology
8. (Optional) Edit Presence settings for Groups or Specific VMRs

Synchronize Lync Server and RealPresence DMA System Time

The Lync Server and RealPresence DMA system must use the same timeserver. A difference in clock time between the systems will result in authentication failures after integration is complete. For more information on RealPresence DMA system time settings, see Time Settings on page 69. For information regarding Microsoft Windows Server time settings, refer to the Windows Server documentation.

Enable Windows Remote Shell

Much of the server-to-server communication needed for Lync integration takes place using the Remote Shell (also called Windows Remote Management listener), which you need to enable on the Active Directory server. Refer to the Polycom Unified Communications Deployment Guide for Microsoft Environments for details.

Install Certificates for the Lync Server

Add the required security certificates to allow the RealPresence DMA system to authenticate with the Lync server. See the *Polycom Unified Communications Deployment Guide for Microsoft Environments* for details on how to accomplish this task. For more information on certificates and how to add them, refer to Certificate Procedures on page 46.

Add the Lync Pool as an External SIP Peer

You need to make the RealPresence DMA system aware of the Microsoft Lync environment by adding it as an external SIP peer.

To add the Lync pool as an external SIP peer

1. Go to **Network > External SIP Peers**.
2. Click **Add**.
3. Enter a **Name** and **Description** for your Microsoft Lync 2013 pool.
4. Enter a **Type** of **Microsoft**.

5 Enter a **Next hop address**.

This value refers to the FQDN or IP address of the Lync pool, not an individual server within a pool.

6 Enter the domain of the Lync pool in the **Destination network** field.

7 Enter a **Port** number of **5061**.

8 Enter a **Transport type** of **TLS**.

9 Enter a prefix or multiple prefixes in the **Prefix range** field (for example, 99) and enable the **Strip prefix** check box.

See the Add External SIP Peer Dialog Box on page 105 for more information.

10 Click the **Lync Integration** tab.

11 In the **Maximum Polycom conference contacts to publish** field, enter a value appropriate for your environment.

The system will limit conference contact presence publishing to this value, even if you have configured more VMRs for presence publishing.

Note: Presence Publishing Limits

If you leave this value at the default of 0, the RealPresence DMA system will not publish presence status for any Polycom conference contacts, and the system-wide presence publishing settings will be unavailable. You can configure a maximum of 25,000 contacts to publish.

12 (Optional) Select the **Enable combined RealPresence-Lync scheduled conferences** check box.

Select this check box only if you need the ability to connect from Outlook meeting invitations.

13 (Optional) Enter a **Lync account URI**. This account ID will be used to resolve Lync conference IDs (any user account on the Lync system can be used).

Select this check box only if you need the ability to connect from Outlook invitations.

See also:

Add External SIP Peer Dialog Box on page 105

Scheduled Conferences on page 167

Enable the Dial by Lync Conference ID Dial Rule

To route calls to Lync conference IDs, enable the **Dial by Lync conference ID** dial rule. By default, the correct action of **Resolve to Lync Conference ID** is selected. Once this dial rule is enabled, non-Lync callers can join conferences hosted on the Lync AVMCU transparently.

To enable the Dial by Lync conference ID dial rule

1 Go to the **Admin > Call Server > Dial Rules** page.

2 Select the **#4** dial rule from the list, **Dial by Lync conference ID**.

3 Click **Edit** in the **Actions** sidebar.

4 Select the **Enabled** check box.

5 (Optional) Select the **Conference template** check box.

6 (Optional) Use the drop-down list to select a conference template to use for calls routed by this dial rule.

Keep in mind that the conference template must specify a **Conference mode** of **AVC only**, or the conference will not start. See page 169.

7 Select a SIP peer from the **Available SIP peers** selection area.

8 Use the right arrow button to move the SIP peer to the **Selected SIP peers** area.

The RealPresence DMA system will query the SIP peer(s) in this list for a Lync conference ID that matches the dial string.

9 Click **OK**.

See also:

Edit Dial Rule Dialog Box on page 248

Configure System-wide Presence and Contact Creation Settings

Once External SIP peer configuration is complete, you can configure system-wide presence publishing and contact creation settings for VMRs. By default, presence publishing and contact creation are disabled; follow these steps to configure them. Contact creation requires that the RealPresence DMA system be integrated with Active Directory.

VMR and Polycom conference contact synchronization happens automatically. When you enable conference contact creation as part of integration (see Integrate RealPresence DMA and Lync 2013), the system compares RealPresence DMA system conference rooms with the corresponding Polycom conference contacts in Active Directory and creates or deletes conference contacts as needed. This happens during startup, service activation, nightly Active Directory synchronization, when you make changes to individual VMRs, and when you click the **Update** button on the **Active Directory Integration** page. Enabling the **Create Polycom conference contacts** check box also ensures that whenever you delete a VMR on the system, any corresponding Polycom conference contact is deleted automatically in Active Directory.

To enable presence publishing for Polycom conference contacts

1 Go to **Admin > Conference Manager > Conference Settings**.

2 Enable the **Publish presence for Polycom conference contacts** check box.

3 Choose a **Lync pool from the Lync pool to create/publish to** list.

4 Enter a **Contact SIP domain**.

The conference contacts will be created in this domain, and the domain will be appended to the Active Directory display name of the conference contact. For example, if the **Contact SIP domain** is “corporate”, the VMR 1234 will correspond to the conference contact “1234@corporate”. If the domain doesn’t exist, it will be created if the **Create Polycom conference contacts** check box is enabled.

5 (Optional) Enable the **Create Polycom conference contacts** check box.

This enables the creation of Polycom conference contacts in Active Directory for new and existing VMRs. You don’t need to enable this functionality if you are handling the creation of conference contacts manually, or if the VMRs already have corresponding conference contacts.

If you enable this check box, the **VMR display name pattern** and **OU for contacts** fields are available.

a (Optional) Modify the **VMR display name pattern** if necessary.

This text will be precede the VMR number of the conference contact in the Lync contact window.

b (Optional) Populate the **OU for contacts** field.

If left blank, the system creates resources in the CN=Users container.

6 Modify the **Default Polycom conference contacts presence settings** field to suit your environment.

See also:

Conference Settings on page 185

Add the RealPresence DMA System to the Lync Topology

Configure the Lync 2013 server to include the RealPresence DMA system in its topology by logging in to the Lync server and using the user interface and Windows PowerShell to configure trust management. See the *Polycom Unified Communications Deployment Guide for Microsoft Environments* for further information on how to accomplish this step.

(Optional) Edit Presence settings for Groups or Specific VMRs

If you need to modify group-level or per-VMR presence settings after integration is complete, go to the **User > Groups > Edit Group** dialog box or the **User > Users > Manage Conf Rooms** page respectively to make changes.

See also:

Edit Group Dialog Box on page 327

Conference Rooms Dialog Box on page 310

Call Server Settings on page 234

Diagnose Presence Problems

If your Lync 2013 client does not display presence for RealPresence DMA system VMRs after you enable automatic contact creation and presence publishing, use the following points to begin troubleshooting.

- Check for any active system alerts

  The description of any active system alerts can indicate potential issues with integration. See the online help or the *Polycom RealPresence DMA 7000 System Operations Guide* for a description of the alert text.

- Verify NTP Lync server and RealPresence DMA system use the same NTP source

  If the system time differs slightly between the RealPresence DMA system and the Lync server, the Lync server can reject contact creation attempts. See the **Admin > Local Cluster > Time Settings** page to configure NTP servers.

- Ensure supported MCUs are in service with available ports

  See the **Network > MCU > MCUs** page for an overview of MCU status.

- Ensure that the **Publish presence for Polycom conference contacts** check box is enabled

  This setting, on the **Admin > Conference Manager > Conference Settings** page, controls system-wide presence publishing for conference contacts.

Microsoft Exchange Server Integration

On the **Microsoft Exchange Server** page, you can integrate the Polycom RealPresence DMA system with your Microsoft Exchange Server, enabling users who install the Polycom Conferencing Add-in for Microsoft Outlook to set up Polycom Conferencing meetings in Outlook.

When you integrate the RealPresence DMA system with an Exchange server, it connects to the Exchange server as the Polycom Conferencing user and subscribes to notifications. The Exchange server notifies the RealPresence DMA system as soon as a meeting invitation (or other mail) arrives in the Polycom Conferencing user inbox. It also sends heartbeat messages to verify that the subscription is working.

If the RealPresence DMA system fails to receive a heartbeat or other notification for 30 seconds, it begins checking its inbox every four minutes for new messages, and also attempts to reestablish the subscription (push connection) each time.

Note: Polycom Solution and Integration Support

Polycom Implementation and Maintenance services provide support for Polycom solution components only. Additional services for supported third-party Unified Communications (UC) environments integrated with Polycom solutions are available from Polycom Global Services, and its certified Partners, to help customers successfully design, deploy, optimize, and manage Polycom visual communication within their third-party UC environments. UC Professional Services for Microsoft Integration is mandatory for Polycom Conferencing for Microsoft Outlook and Microsoft Office Communications Server integrations. Please see http://www.polycom.com/services/professional_services/index.html or contact your local Polycom representative for more information.

Exchange Server integration can't be enabled, and the Polycom RealPresence DMA system doesn't support virtual meeting rooms (VMRs) created by the Polycom Conferencing Add-in for Microsoft Outlook, in **Maximum security** mode. See The Consequences of Enabling Maximum Security Mode on page 55.

As with other Outlook meeting requests, the meeting organizer invites attendees and specifies where and when to meet. "Where" in this case is a conference room, or virtual meeting room (VMR), on the Polycom RealPresence DMA system. The VMR number is generated by the add-in.

The invitees may include conference-room-based Polycom HDX systems as well as users with Polycom HDX personal conferencing endpoints. Polycom HDX systems monitor an Exchange mailbox (either their own or a linked user's) for Polycom Conferencing meeting invitations.

Invitees with a desktop conferencing client (Microsoft Office Communicator, Polycom m100, or Polycom CMA Desktop) can join the meeting by clicking a link in the Outlook reminder or calendar. Invitees with a Polycom HDX endpoint can join by clicking a link on the HDX system's reminder.

The add-in also sends Polycom Conferencing meeting invitations to a Polycom Conferencing user mailbox on the Exchange server. The Polycom RealPresence DMA system accepts or declines these invitations. A meeting invitation is declined if:

- The VMR number is in use by any other conference room (calendared, enterprise, or custom).
- The user sending the invitation isn't in the Polycom RealPresence DMA system's Active Directory cache.
- The invitation contains invalid or incomplete meeting data (the machine-readable metadata block at the bottom of the invitation labeled "POLYCOM VMR ENCODED TOKEN" and preceded with a warning not to edit).

- The meeting's duration exceeds the system's **Conference Duration** setting (see Conference Settings on page 185).
- The conference or chairperson passcode is not valid (see Adding Passcodes for Enterprise Users on page 162).

Note: Considerations for Calendaring and Scheduling

Calendaring is not the same as scheduling. Using the Polycom Conferencing Add-in for Microsoft Outlook to set up a meeting appointment doesn't reserve video resources, and invitations aren't declined due to lack of resources.

The Polycom RealPresence DMA system supports the use of Cisco Codian 4200, 4500, and MSE 8000 series MCUs as part of its conferencing resource pool. If you use Codian MCUs to host Polycom Conferencing (calendared) meetings, be aware of these limitations:

- Codian MCUs don't support the Polycom Conferencing Add-in's recording and streaming options.
- Codian MCUs don't provide the "gathering phase" that RMX and RealPresence Collaboration Server MCUs provide at the beginning of the conference.

Codian MCUs can't receive and accept Outlook meeting invitations themselves, and can only be used if a RealPresence DMA system is part of the Polycom Conferencing for Outlook solution.

See also:

Integrations with Other Systems on page 152

Exchange Server Integration Procedure on page 177

Microsoft Exchange Server Page

The following table describes the fields on the **Microsoft Exchange Server** page.

Field	Description
Enable integration with Microsoft® Exchange Server	Enables the Exchange server integration fields and the **Update** button, which initiates a connection to Microsoft Exchange server.
Exchange Server address	Fully qualified domain name (FQDN) or IP address of the Exchange server.
Domain\user name	The user ID for the Polycom Conferencing infrastructure mailbox on the Exchange server.
Password	The password for the Polycom Conferencing user ID.
Territory	Select a territory, thereby determining which Polycom RealPresence DMA cluster is responsible for integrating with the Exchange server and monitoring the Polycom Conferencing infrastructure mailbox. See Territories on page 294 for more information.
Accept Exchange notifications from these additional IP addresses	If you have multiple Exchange servers behind a load balancer, specify the IP address of each individual Exchange server.

See also:

Microsoft Exchange Server Integration on page 175

Exchange Server Integration Procedure

To integrate the Polycom RealPresence DMA system with your Exchange server

Note: Tips for Exchange Integration

Unless the **Allow unencrypted calendar notifications from Exchange server** security option is enabled (see Security Settings on page 50), the Polycom RealPresence DMA system offers the same SSL server certificate that it offers to browsers connecting to the system management interface. The Microsoft Exchange server must be configured to trust the certificate authority in order for the RealPresence DMA system to subscribe to notifications.

If the RealPresence DMA system is unable to subscribe to notifications, the Microsoft Exchange Server status (see Dashboard) remains **Subscription pending** indefinitely and the Polycom RealPresence DMA system doesn't automatically receive calendar notifications. Instead, it must check the Polycom Conferencing mailbox for meeting request messages, which it does every 4 minutes.

1. Confirm that the Polycom RealPresence DMA system has been successfully integrated with your Active Directory (see Integrations with Other Systems on page 152) and verify the domain.

   Successful Exchange integration requires that the Polycom RealPresence DMA system be integrated with Microsoft Active Directory.
2. Ensure that the DNS server used by the Microsoft Exchange server (usually, the nearest Active Directory domain controller) has an A record for the Polycom RealPresence DMA system that resolves the system's FQDN to its virtual IP address.
3. On the Microsoft Exchange server, create the Polycom Conferencing user that the add-in will automatically invite to Polycom Conferencing meetings.

Caution: Use a Dedicated Mailbox for Meeting Invitations

Create a dedicated Polycom Conferencing mailbox that's used ***specifically and exclusively*** for the purpose of receiving Polycom Conferencing meeting invitations. This is important because the Polycom RealPresence DMA system will delete all messages from the Inbox when it checks this mailbox for meeting invitations.

   When creating the user ID for the system, be sure to specify the same domain used to integrate with the Active Directory. Specify the Display Name as you want it to appear in the To field of invitations. We recommend using Polycom Conference (first and last name respectively).
4. Go to **Admin > Integrations > Microsoft Exchange Server**.
5. Check **Enable integration with Microsoft® Exchange Server** and specify the address (host name or IP address) of the Exchange server.
6. Specify the login credentials for the system on the Exchange server.
7. Set **Territory** to the territory of the Polycom RealPresence DMA cluster to be responsible for calendaring.
8. If you have multiple Exchange servers behind a load balancer, under **Accept Exchange notifications from these additional IP addresses**, add the IP address of each individual Exchange server.
9. Click **Update**.

   A dialog box informs you that the configuration has been updated.

10 Click **OK**.

11 Install the Polycom Conferencing Add-in for Microsoft Outlook on your PC and create the configuration to be distributed to your users (see the online help for the Add-in). Optionally, customize the invitation template(s).

12 Distribute the Polycom Conferencing Add-in for Microsoft Outlook, its configuration file, and customized templates to your users (see the *System Administrator Guide for the Polycom® Conferencing Add-in for Microsoft® Outlook®*).

See also:

Microsoft Exchange Server Integration on page 175

Microsoft Exchange Server Page on page 176

Resource Management System Integration

Integrating with a resource management system (either a Polycom RealPresence Resource Manager system or a Polycom CMA system) provides the Polycom RealPresence DMA system with:

- All site topology information configured in the RealPresence Resource Manager or CMA system.

  The Polycom RealPresence DMA system uses site topology information for a variety of purposes, including cascade for bandwidth conferences, bandwidth management, and Session Border Controller selection. See About Cascading on page 193 and About the Call Server Capabilities on page 233.

- All user-to-device associations configured in the RealPresence Resource Manager or CMA system.

  The Polycom RealPresence DMA system uses user-to-device association to assign classes of service to endpoints based on the user they belong to. See Associate User Dialog Box on page 99.

Note: Split Network configuration and resource management system integration

The RealPresence DMA system currently does not support integration with a Polycom RealPresence Resource Manager or CMA system when configured for split network interfaces on the **Admin > Local Cluster > Network Settings** page.

Integrating with a Polycom RealPresence Resource Manager or CMA system allows you to configure site topology and user-to-device associations in one place instead of two, ensuring consistency. If you don't have a Polycom RealPresence Resource Manager or CMA system (or for some reason don't want to integrate to it), both kinds of information can be manually configured on the Polycom RealPresence DMA system.

Note: Considerations for RealPresence Resource Manager Integration

A RealPresence Resource Manager system (but not a CMA system) can also be integrated to (connected to) the RealPresence DMA system. This enables it to use the RealPresence DMA system's RealPresence Platform API to set up and monitor scheduled and preset dial-out (*anytime*) conferences using the RealPresence DMA system's resources (see RealPresence® Platform API on page 16).

When you integrate a RealPresence Resource Manager system to the RealPresence DMA system (from its management interface), the RealPresence DMA system automatically integrates itself back to the RealPresence Resource Manager system, making it unnecessary to perform the integration described here.

When you integrate the Polycom RealPresence Resource Manager system to a RealPresence DMA supercluster with embedded DNS enabled (see Embedded DNS on page 274), in its **Add DMA** dialog box, select **Support DMA Supercluster** and set **Call server sub-domain** to the value in the RealPresence DMA system's **Call server sub-domain controlled by RealPresence DMA** field.

While the Polycom RealPresence DMA system is integrated with the Polycom RealPresence Resource Manager or CMA system, site topology and user-to-device association may only be configured on the Polycom RealPresence Resource Manager or CMA system. If the integration is terminated, the Polycom RealPresence DMA system retains the information last obtained from the RealPresence Resource Manager or CMA system, but it becomes editable.

Note: Add Required DNS Servers to the System

DNS servers must be able to resolve the RealPresence DMA system's FQDN to its IP address. See Add Required DNS Records for the Polycom RealPresence DMA System on page 30.

In addition, the DNS servers must be able to resolve the Polycom RealPresence Resource Manager or CMA system's FQDN to its IP address. This is necessary even if you specify the Polycom RealPresence Resource Manager or CMA system's IP address when you join it.

Note: Imported Site Topology Information and Territories

When it gets site topology from a RealPresence Resource Manager or CMA system, the RealPresence DMA system enables for conference rooms the first three territories assigned to a RealPresence DMA cluster.

Note: Delegated Authentication

If the **Allow delegated authentication to enterprise directory server** option on the Polycom RealPresence Resource Manager or CMA system is not configured and working properly, the RealPresence DMA system doesn't receive user-to-device association data for enterprise users and intermittently generates alert 2001.

Note: Other Considerations for Resource Management Integration

RealPresence Resource Manager or CMA integration is not supported in **Maximum security** mode. See The Consequences of Enabling Maximum Security Mode on page 55.

If you want to support cascading for bandwidth, but don't have a Polycom RealPresence Resource Manager or CMA system, you must create site topology information on the Polycom RealPresence DMA system. See Site Topology on page 278.

See also:

Integrations with Other Systems on page 152
Resource Management System Page on page 180
Join Resource Management System Dialog Box on page 181
Resource Management System Integration Procedures on page 181

Resource Management System Page

The **Resource Management System** page contains the **Join Resource Management System** command, which you use to integrate to your Polycom RealPresence Resource Manager or CMA system. When the system is integrated with a Polycom RealPresence Resource Manager or CMA system, it contains the **Leave Resource Management System** command, which you use to terminate the integration.

Note: Considerations for RealPresence Resource Manager Integration

A RealPresence Resource Manager system (but not a CMA system) can be integrated to (connected to) the RealPresence DMA system. This enables it to use the RealPresence DMA system's RealPresence Platform API to set up and monitor scheduled and preset dial-out (*anytime*) conferences using the RealPresence DMA system's resources (see RealPresence® Platform API on page 16).

When you integrate a RealPresence Resource Manager system to the RealPresence DMA system (from its management interface), the RealPresence DMA system automatically integrates itself back to the RealPresence Resource Manager system, making it unnecessary to perform the integration described here.

When you integrate the Polycom RealPresence Resource Manager system to a RealPresence DMA supercluster with embedded DNS enabled (see Embedded DNS on page 274), in its **Add DMA** dialog box, select **Support DMA Supercluster** and set **Call server sub-domain** to the value in the RealPresence DMA system's **Call server sub-domain controlled by RealPresence DMA** field.

The list on this page displays information about the Polycom RealPresence Resource Manager or CMA system. The following table describes the fields in the list.

Field	Description
Host name	Name of the system.
IP Address	IP address of the system.
Model	Type of system.
Version	Software version of the system.
Status	Status of last attempt to contact system (OK or Unreachable).
Time	Time of last attempt to contact system.

See also:

Integrations with Other Systems on page 152
Resource Management System Integration on page 178
Join Resource Management System Dialog Box on page 181
Resource Management System Integration Procedures on page 181

Join Resource Management System Dialog Box

Lets you integrate the Polycom RealPresence DMA system with a Polycom RealPresence Resource Manager or CMA system to obtain site topology information and user-to-device association information.

Note: Maximum Security Mode and Resource Management Integration

RealPresence Resource Manager or CMA integration is not supported in **Maximum security** mode. See The Consequences of Enabling Maximum Security Mode on page 55.

Note: Add Required DNS Servers to the System

DNS servers must be able to resolve the RealPresence DMA system's FQDN to its IP address. See Add Required DNS Records for the Polycom RealPresence DMA System on page 30.

In addition, the DNS servers must be able to resolve the Polycom RealPresence Resource Manager or CMA system's FQDN to its IP address. This is necessary even if you specify the Polycom RealPresence Resource Manager or CMA system's IP address when you join it.

Note: Delegated Authentication

If the **Allow delegated authentication to enterprise directory server** option on the Polycom RealPresence Resource Manager or CMA system is not configured and working properly, the RealPresence DMA system doesn't receive user-to-device association data for enterprise users and intermittently generates alert 2001.

The following table describes the fields in the dialog box.

Field	Description
Host name or IP address	The Polycom RealPresence Resource Manager or CMA system with which to integrate.
User name	Administrative user ID with which the Polycom RealPresence DMA system can log into the Polycom RealPresence Resource Manager or CMA system.
Password	Password for the administrative user ID.

See also:

Integrations with Other Systems on page 152

Resource Management System Integration on page 178

Resource Management System Page on page 180

Resource Management System Integration Procedures on page 181

Resource Management System Integration Procedures

Note: Maximum Security Mode and Resource Management Integration

RealPresence Resource Manager or CMA integration is not supported in **Maximum security** mode. See The Consequences of Enabling Maximum Security Mode on page 55.

Note: Add Required DNS Servers to the System

DNS servers must be able to resolve the RealPresence DMA system's FQDN to its IP address. See Add Required DNS Records for the Polycom RealPresence DMA System on page 30.

In addition, the DNS servers must be able to resolve the Polycom RealPresence Resource Manager or CMA system's FQDN to its IP address. This is necessary even if you specify the Polycom RealPresence Resource Manager or CMA system's IP address when you join it.

Note: Delegated Authentication

If the **Allow delegated authentication to enterprise directory server** option on the Polycom RealPresence Resource Manager or CMA system is not configured and working properly, the RealPresence DMA system doesn't receive user-to-device association data for enterprise users and intermittently generates alert 2001.

Note: Considerations for RealPresence Resource Manager Integration

When you integrate a RealPresence Resource Manager system to the RealPresence DMA system (from its management interface), the RealPresence DMA system automatically integrates itself back to the RealPresence Resource Manager system, making it unnecessary to perform the integration described here.

When you integrate the Polycom RealPresence Resource Manager system to a RealPresence DMA supercluster with embedded DNS enabled (see Embedded DNS on page 274), in its **Add DMA** dialog box, select **Support DMA Supercluster** and set **Call server sub-domain** to the value in the RealPresence DMA system's **Call server sub-domain controlled by RealPresence DMA** field.

To integrate with a resource management system

1. Go to **Admin > Integrations > Resource Management System**.
2. In the **Actions** list, select **Join Resource Management System**.
3. In the **Join Resource Management System** dialog box, enter the host name or IP address of the Polycom RealPresence Resource Manager or CMA system and the credentials with which to log into it. Then click **OK**.
4. When asked to confirm that you want to join, click **Yes**.

   The system connects to the Polycom RealPresence Resource Manager or CMA system, establishes the integration, and obtains site topology and user-to-device association data (this may take a few minutes). A dialog box informs you when the process is complete.
5. On the **Resource Management System** page, verify the integration information.
6. Go to **Network > Site Topology > Sites**, and from there to the other site topology pages, to see the site topology information obtained from the Polycom RealPresence Resource Manager or CMA system.

To terminate the integration with a resource management system

1. Go to **Admin > Integrations > Resource Management System**.
2. In the **Actions** list, select **Leave Resource Management System**.

3 When asked to confirm that you want to leave, click **Yes**.

The system connects to the Polycom RealPresence Resource Manager or CMA system and terminates the integration. A dialog box informs you when the process is complete.

4 On the **Resource Management System** page, verify that the system is no longer integrated with the Polycom RealPresence Resource Manager or CMA system.

The Polycom RealPresence DMA system retains the site topology and user-to-device association information last obtained from the RealPresence Resource Manager or CMA system, but it's now editable.

See also:

Integrations with Other Systems on page 152

Resource Management System Integration on page 178

Resource Management System Page on page 180

Join Resource Management System Dialog Box on page 181

Juniper Networks SRC Integration

You can integrate the Polycom RealPresence DMA system's Call Server with a Juniper Networks SRC Series Session and Resource Control module to provide bandwidth assurance services. This allows the RealPresence DMA system to consult a configured policy on the Juniper SRC system at call time to assure and/or reserve required network resources for a call. It also allows priority and preemption policies to be applied to RealPresence DMA system calls.

In addition, the RealPresence DMA system's priority-based QoS packet marking (Gold/Silver/Bronze class of service) is applied by the Juniper SRC system throughout the network it controls.

See also:

Integrations with Other Systems on page 152

Juniper Networks SRC Page on page 183

Juniper Networks SRC Integration Procedure on page 184

Juniper Networks SRC Page

The following table describes the fields on the **Juniper Networks SRC** page.

Field	Description
Enable integration with Juniper Networks® SRC	Enables the SRC integration fields and the **Update** button, which initiates a connection to the Juniper Networks SRC server.
IP address or host name	The host name or IP address of the SRC server.
Server port	The port number used to connect to the SRC server.
Client ID	The user ID with which the Polycom RealPresence DMA system logs into the SRC server.

Field	Description
Client password	The password with which the Polycom RealPresence DMA system logs into the SRC server.
Subscriber URI	The subscriber URI of an endpoint known to the SRC server, specified as in this example: ip:ipAddress=192.168.70.228 This can be any endpoint for which the SRC server will return information when queried to test the connection.

See also:

Juniper Networks SRC Integration on page 183

Juniper Networks SRC Integration Procedure

To configure SRC integration

1. Go to **Admin > Integrations > Juniper Networks SRC**.
2. Check **Enable integration with Juniper Networks® SRC** and specify the address of the SRC server.
3. Specify the login credentials for the system to connect to the SRC server.
4. Specify the subscriber URI of an endpoint known to the SRC server, specified as in this example:

   `ip:ipAddress=192.168.70.228`

   This can be any endpoint about which the SRC server will return information when queried to test the connection.
5. Click **Update**.

   To verify that it can successfully communicate with the SRC server, the Polycom RealPresence DMA system queries the SRC server about the endpoint you specified and confirms that the query is successful. A dialog box informs you that the configuration has been updated.
6. Click **OK**.

See also:

Juniper Networks SRC Integration on page 183

Juniper Networks SRC Page on page 183

Conference Manager Configuration

This chapter describes the following Polycom® RealPresence® Distributed Media Application™ (DMA®) 7000 system configuration topics related to the Conference Manager functionality:

- Conference Settings
- Conference Templates
- IVR Prompt Sets
- Shared Number Dialing

Conference Settings

On the **Conference Settings** page, you can define the default class of service and bit rate limits, a dialing prefix, and various default conference properties for the Polycom RealPresence DMA system. If the system is integrated with a Microsoft® Lync 2013 environment, you can also configure system-wide default settings related to Presence Publishing for Polycom conference contacts. The table below describes the properties on this page.

Note: Class of Service Scope

The default class of service, maximum bit rate, and minimum downspeed rate are the default values for point-to-point calls as well as conference (VMR) calls. But when a device calls a conference room, the class of service of the conference room applies to the call, not the class of service of the group, user, or device.

Field	Description
Default class of service	The class of service assigned to a user or endpoint if the class of service isn't specified at the endpoint, user, or group level. **Note:** When a device calls a conference room (VMR), the class of service of the conference room applies to the call, not the class of service of the group, user, or device.
Default maximum bit rate (kbps)	The maximum bit rate for a call if the maximum bit rate for the user or endpoint isn't specified at the endpoint, user, or group level.
Default minimum downspeed (kbps)	The minimum bit rate to which a call can be reduced (downspeeded) if the minimum downspeed for the user or endpoint isn't specified at the endpoint, user, or group level.

Field	Description
Dialing prefix	Numeric dial string prefix for calling VMRs and VEQs. If neighboring with a Polycom gatekeeper on which the Simplified Dialing service is enabled and uses a prefix of 9 (the default), don't use 90-99. The neighbor gatekeeper recognizes the 9 as a known prefix and ignores the second digit. If a prefix is specified, it's used for SIP calls as well so that the same number can be dialed from both H.323 and SIP endpoints. **Caution:** Changing the dialing prefix terminates any existing H.323 calls. When you click **Update**, the system prompts you to confirm.
Default max total participants	Specifies the maximum conference size assigned to a conference room if a larger or smaller maximum size isn't specified for it. **Automatic** (the default setting) uses the largest conference size supported by the MCU (or by all available MCUs if cascading is enabled) as the default maximum.
Default conference template	Default template used by the system. See Conference Templates on page 190.
Default conference room territory	The territory assigned to a user's conference room if it isn't specified at the user or conference room level. A conference room's territory assignment determines which RealPresence DMA cluster hosts the conference (the primary cluster for the territory, or its backup cluster if necessary). Up to three territories in a superclustered system can host conference rooms.
Default MCU pool order	Default MCU pool order used by the system. See MCU Pool Orders on page 145.
MCU Selection	The method for the RealPresence DMA system to use when it selects MCUs from MCU pools: **Prefer MCU in first MCU pool** ensures that the DMA system will always route the call to the first available MCU in the first MCU pool. If no MCU is available, the second MCU pool will be searched for an available MCU, and so on. **Prefer MCU in first caller's site** will match the MCU chosen for the call with the site that the first caller's endpoint belongs to.
Minimum generated room ID Maximum generated room ID	Specify the minimum and maximum values for auto-generated room IDs created for custom conference rooms. Values may be up to six digits long, and the minimum must be less than the maximum. The six-digit limit applies only to generated IDs for custom conference rooms.
Default resource priority namespace	In an Assured Services SIP (AS-SIP) environment, a Local Session Controller (LSC) can provide priority-based precedence and preemption services to ensure that the most important calls get through. If your organization has implemented such a resource prioritization mechanism, set this to the namespace being used for resource priority values. If the namespace being used isn't listed, select Custom and enter the name in the box to the right of the list.

Field	Description
Default resource priority value	If your organization has implemented a resource prioritization mechanism, set this to the default priority value assigned to a conference if the specific conference room (VMR) doesn't have a higher value. If using a custom namespace, enter the value in the box to the right of the list. The string `namespace:value` is used in the SIP Resource-Priority header of outbound calls from conference rooms (VMRs).
Default Conference Duration	Default maximum duration of a conference (in hours and minutes) or **Unlimited** (the maximum in this case depends on the MCU).
Presence Publishing	This section allows you to configure Polycom conference contact presence options.
Publish presence for Polycom conference contacts	Check this box to make presence status visible for each conference contact in the Lync 2013 contact window. **Note**: This check box affects the option **Default Polycom conference contacts presence settings** below.
Lync pool to create / publish to	A list of Microsoft SIP peer pools to which the RealPresence DMA system can publish presence. Select the pool whose clients should see conference contact presence indications. A Lync pool will appear in the list if: • It is defined as an External SIP Peer with type of **Microsoft**. • The field **Maximum Polycom conference contacts to publish** in the External SIP Peer **Lync Integration** tab is set to a value greater than zero.
Contact SIP domain	The domain portion of the SIP URI that the RealPresence DMA system creates for a contact (for example, sipdomain.net). The conference contacts will be created in this domain. If the domain doesn't exist, it will be created if the **Create Polycom conference contacts** check box is enabled. **Note**: If there are multiple superclusters that are integrated with a Microsoft® Lync 2013 environment, be aware that th**is** field should be different for each supercluster. If this value is the same across multiple superclusters and the systems are integrated with the same Active Directory, settings changes on one supercluster could affect other superclusters. When you enable the **Presence Publishing** check box on this page and click the **Update** button to save the changes, a dialog may appear warning you of this situation.
Create Polycom conference contacts	Only available if Microsoft Active Directory integration is enabled. When checked, the RealPresence DMA system will create Active Directory resources for any meeting rooms that have the **Presence** option enabled. **Note**: Once you enable this option and update the page, all existing conference contacts (VMRs) that do not have the **Presence** option explicitly disabled will have an Active Directory contact resource created for interoperability with Lync 2013. In other words, if you have not changed the **Presence** option manually for any VMRs, all VMRs will have corresponding Active Directory contacts created.

Field	Description
VMR display name pattern	The text pattern that describes the name of the VMR contact. This text will precede the VMR number when displayed in the Lync contact window (for example, a VMR display name pattern of “Conference room” would create display names of “Conference room <VMR number>”). The maximum pattern length is 63 characters. After you edit this field, it may take some time for the change to be seen in the Lync client, depending on how many conference contacts the RealPresence DMA system is managing. **Note**: This field is enabled when the **Create Polycom conference contacts** check box is checked.
OU for contacts	The Active Directory OU (Organizational Unit) in which the RealPresence DMA system should create contact resources. If left blank, the system creates resources in the CN=Users container.
Default Polycom conference contacts presence settings	Changes the default system-wide setting for VMR presence publishing and Active Directory contact creation. Depending on the settings of the **Publish presence for Polycom conference contacts** and **Create Polycom conference contacts** check boxes, there are two modes of operation for this field. See Default Polycom conference contacts presence settings on page 188 for details.

Default Polycom conference contacts presence settings

The following table illustrates the two modes of operation for the **Default Polycom conference contacts presence settings** field. The choices available for this field depend on the status of the **Publish presence for Polycom conference contacts** and **Create Polycom conference contacts** check boxes.

Note that the setting in this field can be overridden by other presence settings in the system. See Microsoft Lync 2013 Integration on page 167 for more information.

Publish presence for Polycom conference contacts	Create Polycom conference contacts	Default Polycom conference contacts presence settings
Checked	Unchecked	• Publish Polycom conference contacts presence • Do not publish Polycom conference contacts presence
Checked	Checked	• Create Polycom conference contacts and publish presence • Do not create Polycom conference contacts or publish presence

To specify conference settings

1 Go to **Admin > Conference Manager > Conference Settings**.

2 On the **Conference Settings** page, make the appropriate selections.
3 Click **Update**.

See also:

Conference Templates on page 190
IVR Prompt Sets on page 218
Shared Number Dialing on page 220

Remove Contacts from Active Directory Dialog Box

If you disable the **Publish presence for Polycom conference contacts** option and Active Directory integration is enabled, the **Remove Contacts from Active Directory** action becomes available in the left-hand navigation pane. For systems integrated with a Microsoft® Lync 2013 environment, this action allows you to remove any contacts in Active Directory created by the RealPresence DMA system.

This action will apply to contacts created by any supercluster integrated with this Active Directory. You can use this dialog box to choose whether to remove only the contacts created in one SIP domain, or remove all contacts regardless of SIP domain.

Field	Description
Remove all Polycom conference contacts associated with contact SIP domain	Limit the change to one SIP domain. The default value in the text field is the current SIP domain in the **Contact SIP domain** field.
Remove all polycom conference contacts associated with any contact SIP domain	All conference contacts created by the RealPresence DMA system will be removed, regardless of SIP domain.

Keep in mind that if you choose to remove all contacts across all SIP domains, the conference contacts associated with other RealPresence DMA system superclusters that were removed by this action will be automatically recreated daily, when the systems sync with Active Directory. You can also manually recreate these contact resources by performing the following steps.

To manually recreate Lync 2013 contact resources associated with other superclusters

1 Log in to a system on one of the affected superclusters.
2 Go to **Admin > Conference Manager > Conference Settings**.
3 Deselect **Publish presence for Polycom conference contacts**.
4 Click **Update**.
5 Select **Publish presence for Polycom conference contacts**.
6 Click **Update**.

A caution dialog may appear regarding contact SIP domains for multiple superclusters.

7 Click **OK**.
8 Repeat steps 1 through 7 for any other affected superclusters.

See also:

Conference Settings on page 185

Microsoft Lync 2013 Integration on page 167

Conference Templates

Conference templates are used to create users' conference rooms, which define a user's conference experience. A conference template specifies a set of conference properties, such as the line (bit) rate and video display mode.

Note: Cisco Codian Template Settings

The Polycom RealPresence DMA system supports the use of some Cisco Codian MCUs, and conference templates can include Codian-specific settings.

Two Types of Templates

You can create a conference template in two ways:

- Specify the individual conference properties directly in the Polycom RealPresence DMA system, creating a "standalone" (free-standing) template independent of the profiles available on the system's RealPresence Collaboration Server or RMX MCUs.
- Link the template to a RealPresence Collaboration Server or RMX profile that exists on some or all of the MCUs.

Either kind of template can also include settings specific to Cisco Codian MCUs so that it can be used in deployments containing both kinds of MCUs.

Standalone Templates

Standalone templates defined in the Polycom RealPresence DMA system free you from having to ensure that the exact same RealPresence Collaboration Server or RMX profiles exist on all the MCUs. You specify the desired conference properties directly in the template.

When it uses a standalone template for a conference, the system sends the specific properties to the MCU instead of pointing to one of its profiles.

When using a template not linked to a profile, the system doesn't use the template's properties to limit its choice of MCU. It selects the least used MCU in the selected MCU pool (see MCU Pools on page 142 and MCU Pool Orders on page 145). Unsupported properties are ignored or degrade gracefully if necessary. For instance:

- If a conference set to a 4096 kbps line rate is forced to land on an MCU that doesn't support that value, the line rate falls back to 1920 kbps.
- If a conference with encryption enabled is forced to land on an MCU that doesn't support encryption, that property is ignored.

To preferentially route conferences to certain MCUs, use MCU pool orders. See MCU Pools on page 142 and MCU Pool Orders on page 145.

Templates Linked to RealPresence Collaboration Server or RMX Profiles

Linking a template to a RealPresence Collaboration Server or RMX profile lets you access profile properties that aren't currently available in a standalone template, as the MCU may offer more profile properties than

standalone templates. When you link a template with an MCU profile, the MCU's profile settings take priority over values set in the RealPresence DMA system template.

Note: MCU Pools vs. Profiles

You can also use a template linked to a RealPresence Collaboration Server or RMX profile to preferentially route conferences to MCUs that have the profile. But we recommend that you create MCU pools and pool orders for this purpose instead of using profiles. See MCU Pools on page 142 and MCU Pool Orders on page 145.

When you link a template to a profile, it's up to you to ensure that the profile exists on the MCUs you want to use with that template and that its settings are the same on all of them.

Note: Templates and API Recording Events

When you link to a RealPresence Collaboration Server or RMX profile that has recording enabled, the RealPresence DMA system isn't aware that recording is enabled and rejects attempts to start recording via the API. To enable recording control via the API, use a standalone conference template with recording enabled, not a template linked to a RealPresence Collaboration Server or RMX profile.

Note: Profile-Based Templates and Passcodes

When you link to a RealPresence Collaboration Server or RMX profile that uses an IVR service which doesn't prompt for passcodes, callers aren't prompted even if the conference has a conference or chairperson passcode.

When it uses a profile-based template, the system first tries to find an MCU that has that profile (but it does so within the MCU pool order rules; see MCU Pools on page 142 and MCU Pool Orders on page 145). It selects the least used MCU in the pool that has that profile.

If none of the MCUs in the pool have that profile, the system selects the least used MCU in the pool and does one of the following:

- If the system selected a Cisco Codian MCU, it uses the Codian-specific settings of the specified template.
- If the system selected a Polycom RealPresence Collaboration Server or RMX MCU, it falls back to its default conference template (see Conference Settings on page 185). If the default template happens to be linked to a profile that this MCU doesn't have, the system falls back to its built-in conference properties settings.

See also:

Conference Settings on page 185

About Conference IVR Services on page 192

About Cascading on page 193

Conference Templates Procedures on page 216

Template Priority

A user (local or enterprise) has one or more conference rooms. Each room may either use the system's default template (specified on the Conference Settings page) or use a specifically assigned template. (Typically, most conference rooms use the default template.)

An enterprise user can be associated with multiple enterprise groups, and each group may or may not have a specifically assigned template.

You can rank the conference templates by priority, so that the system knows which template to use when the user is associated with more than one.

When someone dials into a conference room, the system uses these rules (in order of importance) to determine which template to use for the conference:

1. If the conference room has a specifically assigned template (not the system default) associated with it, use that template.
2. If the user associated with the conference room belongs to one or more enterprise groups that have specifically assigned templates, use the template with the highest priority.
3. Otherwise, use the system default conference template.

See also:

Conference Templates on page 190

Two Types of Templates on page 190

About Cascading on page 193

Conference Templates Procedures on page 216

About Conference IVR Services

One of the conference properties you can optionally specify in a template is the conference IVR service that the Polycom RealPresence Collaboration Server or RMX MCU should use. For most purposes, you shouldn't do so. Polycom MCUs have two defaults, one for conferences with passcodes and one for conferences without passcodes. For conferences configured via RealPresence DMA (not linked to a profile), the MCU automatically uses the right default IVR service for each conference.

Note: MCU IVR Service vs. Shared Number Dialing

The RealPresence Collaboration Server or RMX conference IVR service is separate and distinct from the RealPresence DMA system's SIP-only shared number dialing feature (see Shared Number Dialing on page 220).

If you do choose to override the default and specify an IVR service, it's up to you to make sure that the IVR service you select is appropriate for the users whose conferences will use this template, and that it's available on the MCUs on which those conference may take place. See your Polycom RealPresence Collaboration Server or RMX documentation for information about conference IVR services. This feature is not supported on Cisco Codian MCUs.

On the **Conference IVR** tab of the **Add Conference Template** and **Edit Conference Template** dialog boxes, the list contains the names of all the conference IVR services available on the currently connected MCUs. If an IVR service is only available on some of the connected MCUs, its entry shows how many of the MCUs have that IVR service (for instance, 2 of 3).

If a template specifies a conference IVR service, the system will put conferences using that template on the least used MCU that has that conference IVR service. If there are none, it falls back to the default conference IVR service.

Note: Bypass IVR Service Passcode Prompt

Callers to conferences with passcodes (PINs) can bypass the IVR service's passcode prompting by appending their passcode to the dial string, following the protocol-appropriate delimiter:

- H.323: `<vmr number>#<passcode>`
- SIP: `<vmr number>**<passcode>`

See also:

Conference Templates on page 190

Two Types of Templates on page 190

Template Priority on page 191

Conference Templates Procedures on page 216

About Cascading

One of the conference features you can optionally enable in a template is cascading, which makes it possible for a conference to span RealPresence Collaboration Server or RMX MCUs. One of two mutually exclusive forms of cascading can be enabled:

- Cascading for Bandwidth
- Cascading for Size

Note: SIP vs. H.323 Cascade Links

The cascade links between MCUs use H.323 signaling for any conferences containing at least one AVC endpoint.

SIP cascade links are used when:

- There are only SVC endpoints in the conference
- One of the MCUs in the cascade does not support H.323

Cascading for Bandwidth

Cascading a conference across multiple MCUs to conserve bandwidth is especially useful when using WAN links. Participants can connect to MCUs that are geographically near them, reducing network traffic between sites to a single link to each MCU.

Cascading does, however, impact the quality of the conference experience.

If you have a Polycom RealPresence Resource Manager or CMA system in your network, you can enable cascaded-for-bandwidth conferences with the following steps:

1. On the Polycom RealPresence Resource Manager or CMA system, create site topology data defining the territories, sites, site links, and MPLS clouds in your network, and the subnets in each site.
2. On the Polycom RealPresence DMA system, integrate with the Polycom RealPresence Resource Manager or CMA system to obtain its site topology data. See Resource Management System Integration on page 178.
3. On the Polycom RealPresence DMA system, enable cascading for bandwidth in some or all of your conference templates.

If you don't have a Polycom RealPresence Resource Manager or CMA system, you must define your site topology in the Polycom RealPresence DMA system instead of importing it. See Site Topology on page 278.

Note: Cascading for Bandwidth Topology

Cascading for bandwidth uses a hub-and-spoke configuration; each cascaded MCU is only one link away from the “hub” MCU that hosts the conference. To host the conference, the system chooses the same MCU that it would have chosen in the absence of cascading. See MCU Selection Process on page 147.

Once a conference with cascading for bandwidth enabled has started (the “hub” MCU has been chosen), the Polycom RealPresence DMA system uses the site topology information to route callers to the nearest eligible MCU (using the pool order applicable to the conference) that has available capacity:

- If the caller is in a site that contains one or more MCUs, the system selects an MCU in that site (it selects the same MCU that it would have chosen in the absence of cascading. See MCU Selection Process on page 147.
- If the caller is in a site that doesn’t contain MCUs, the system looks for MCUs in sites that only have a direct network path to the caller’s site (no path to the caller’s site through a cloud). It selects one, using the same selection process.
- If there are no MCUs in sites that only have a direct network path to the caller’s site (no path to the caller’s site through a cloud), the system looks for MCUs in sites that are connected to the caller’s site through a cloud. It selects one, using the same selection process.
- If an MCU belongs to an MCU pool, the DMA system selects an MCU that meets the requirements of the selection process from the highest priority pool within the pool order.

When determining which MCU is “nearest” and which path is best for a cascade link, the system takes into account the bandwidth availability and bit-rate limitations of alternative paths.

If the selected MCU is new to the conference, the RealPresence DMA system creates the cascade link to the “hub” MCU hosting the conference. The cascade link bandwidth matches the conference setting, up to 1920 kbps.

Cascaded conferences can have conference passcodes and can be Polycom Conferencing for Outlook (calendared) conferences (see Microsoft Exchange Server Integration on page 175).

Cascading for Size

Cascading for size makes it possible for a conference to contain many more participants than there is room for on any single MCU.

Note: Large Cascaded Conferences

When a conference is cascaded across multiple MCUs, the video and audio from each MCU is transmitted to every other MCU through cascade links. This incurs some delay. In a conference with many cascade links, this delay may become noticeable to the participants and could limit the effectiveness of two-way real-time communication.

The transmission delay isn’t noticeable in one-way communication or when all the speakers are on the same MCU. For this reason, large cascaded conferences are best suited to presentation-style conferences where only a few participants (on the same MCU) speak and everyone else only listens.

Note Cascading for Size vs. Cascading for Bandwidth

Cascading for size differs from cascading for bandwidth in two primary ways:

- Cascading for size doesn't use site topology information to choose additional MCUs to use for a conference.
- Cascading for size supports a second level of cascade links so that a cascaded MCU can be either one link away from the "hub" MCU hosting the conference (this is a "spoke" MCU) or two links away (a "leaf" MCU linked to a "spoke").

To host a cascade-for-size conference, the system chooses the same MCU that it would have chosen in the absence of cascading (see MCU Selection Process on page 147), except that for each existing cascade-for-size conference on an MCU, it subtracts the number of video ports reserved for cascading from the number of video ports available when calculating port availability.

Cascading for size may not be appropriate for all conferences and should be used selectively. In addition to the transmission delay issue described above, each cascade-for-size conference reserves ports on the MCU, reducing the ports available for participants. Enabling cascading for size for conferences that don't require cascading causes MCU resources to be underutilized.

You can enable cascade-for-size conferences with these steps:

1. Enable cascading for size in some or all of your conference templates.
2. For one or more of your MCUs, specify the number of ports per cascade-for-size conference to reserve for cascade links (see Edit MCU Dialog Box on page 133).

Once a conference with cascading for size enabled has started (the "hub" MCU has been chosen), the Polycom RealPresence DMA system does the following for each subsequent participant that dials into that conference:

3. From among the MCUs that are currently part of the conference and have ports available that are not reserved for cascading, the RealPresence DMA system randomly selects one of the MCUs closest to the hub MCU. This may be the hub MCU.
4. If on every MCU that's currently part of the conference, all available ports are reserved for cascading, the RealPresence DMA system does the following:
   a. It selects an MCU from which to create a cascade link to a new MCU.

      From among the MCUs that are currently part of the conference and that have ports available for the cascade link, the RealPresence DMA system selects the one closest to the hub MCU. This may be the hub MCU.

   b. It selects a new MCU to join the conference, using the same selection process used for selecting the first (hub) MCU, and creates the cascade link to it.

   c. If no MCU has ports available for cascade links, the RealPresence DMA system rejects the call.

See also:

Conference Templates on page 190

Two Types of Templates on page 190

Template Priority on page 191

About Conference IVR Services on page 192

Conference Templates Procedures on page 216

Conference Templates List

The following table describes the fields in the **Conference Templates** list.

Column	Description
Priority	The priority ranking of the template.
Name	The name of the template.
Description	A description of the template.

The Polycom RealPresence DMA system comes with a **Factory Template** that has a default set of conference parameters. You can edit that template and create additional templates.

See also:

Conference Templates on page 190

Edit Conference Template Dialog Box on page 206

Conference Templates Procedures on page 216

Add Conference Template Dialog Box

Lets you add a conference template. The following table describes the fields in the dialog box. The **Common Settings** section applies to all MCUs. The **Cisco Codian** section appears only if the system is licensed to use Cisco Codian MCUs, and its settings apply only if a Codian MCU is selected for the call. The other sections apply only if a Polycom RealPresence Collaboration Server or RMX MCU is selected.

Field	Description
Common Settings	
Name	A meaningful name for the template (up to 50 characters).
Description	A brief description of the conference template (up to 50 characters).
RMX General Settings	
RMX Profile Settings	See Two Types of Templates on page 190.
Use existing profile	Links this template to the RMX profile selected in the list below. For most purposes, we recommend leaving this box unchecked and specifying conference properties directly. See Conference Templates on page 190.
RMX profile name	Identifies the profile to which this template is linked. The list contains the names of all the profiles available on the currently connected MCUs. If a profile is only available on some of the connected MCUs, its entry shows how many of the MCUs have that profile (for instance, 2 of 3). The system will put conferences using this template on the least used MCU that has this profile. If there are none, it selects the least-used MCU and either uses the Codian-specific settings (if it selected a Cisco Codian MCU) or falls back to the default conference template (if it selected a Polycom MCU).

Field	Description
Conference Settings	
Conference mode	One of the following: • *AVC only* — Standard video conferencing mode supporting the H.264 Advanced Video Coding (AVC) compression standard. In an AVC conference, the MCU transcodes the video stream to each device in the conference to provide an optimal experience, based on its capabilities. This is the only mode that supports the use of Polycom MCU profiles, third-party and legacy endpoints, and Codian and legacy RMX MCUs. • *SVC only* — video conferencing mode supporting the Annex G extension of the H.264 standard, known as H.264 Scalable Video Coding (SVC). An SVC video stream consists of a base layer stream that encodes the lowest available quality representation plus optional enhancement layer streams that each provide an additional quality improvement. The MCU passes the video streams from each device to each device. The number of enhancement layer streams sent to a device can be tailored to fit the bandwidth available and device capabilities. SVC conferencing is only possible with Polycom MCUs and endpoints that support H.264 SVC. Selecting this setting disables most of the other template settings. • *Mixed AVC and SVC* — Enables both AVC-only endpoints and endpoints supporting SVC to join the conference. If the selected MCU doesn't support SVC, the conference is started in AVC mode. **Note:** If the MCU supports SVC but not mixed mode (RMX 7.8), the conference fails to start. See SVC Conferencing Support on page 17. See also the documentation for your RealPresence Collaboration Server or RMX MCU.
Conference mode experience	For mixed conference mode, specifies the video experience optimization strategy the MCU should implement. The experience optimization strategy determines the quality of the video streams that SVC participants receive from AVC participants. See the documentation for your RealPresence Collaboration Server or RMX MCU for detailed data regarding the resolutions each experience setting supports for various ranges of line rate. **Note:** All AVC callers must be capable of sending at a line rate available for the experience setting. SVC participants receive the same stream quality from all AVC endpoints, regardless of their individual capabilities.
Cascade for bandwidth	Enables conferences using this template to span Polycom MCUs to conserve network bandwidth. Cascading for bandwidth requires site topology information, which the Polycom RealPresence DMA system can get from a Polycom RealPresence Resource Manager or CMA system (see Resource Management System Integration on page 178) or you can create (see Site Topology on page 278). This option and **Cascade for size** are mutually exclusive. See About Cascading on page 193 for more information about enabling cascading of conferences.

Field	Description
Cascade for size	Enables conferences using this template to span Polycom MCUs to achieve conference sizes larger than a single MCU can accommodate. This option and **Cascade for bandwidth** are mutually exclusive. See About Cascading on page 193 for more information about enabling cascading of conferences.
Video switching (VSW)	Enables a special conferencing mode that provides HD video while using MCU resources more efficiently. All participants see the current speaker full screen (the current speaker sees the previous speaker). If this mode is enabled: • The minimum line rate available is 768 kbps (except for SD resolution, available only on v7 and newer Polycom MCUs with MPM+ or MPMx cards). • All endpoints must connect at the same line rate, and those that don't support the specified line rate are connected in voice-only mode. • The video clarity, layout, and skins settings are not available. • LPR is automatically turned off, but can be turned back on. If this option is off, conferences using this template are in Continuous Presence (CP) mode, in which the MCU selects the best video protocol, resolution, and frame rate for each endpoint according to its capabilities.
H.264 high profile (v7.6)	Sets a VSW conference to use Polycom's bandwidth-conserving H.264 High Profile codec (previously supported only in continuous presence mode). If this is selected, all endpoints in the conference must support High Profile. Endpoints not connecting at the conference's exact line rate and resolution are connected in audio-only mode. Available only on v7.6 and newer Polycom MCUs with MPMx cards.
Resolution	Available only if **Video switching** is selected. Offers the following resolution settings: • H.264 1080p30 (available only on Polycom MCUs with MPM+ or MPMx cards) • H.264 720p30 • H.264 720p60 (available only on Polycom MCUs with MPM+ or MPMx cards) • H.264 SD 30 (available only on Polycom MCUs with MPM+ or MPMx cards) • H.264 1080p60 (available only on the RealPresence Collaboration Server 1800 MCU or Polycom MCUs with MPMRx cards)

Field	Description
Line rate	The maximum bit rate at which endpoints can connect to conferences using this template. If **Video switching** is selected, the minimum line rate is 768 kbps (except for SD resolution, available only on v7 and newer Polycom MCUs with MPM+ or MPMx cards).
Audio only	Sets the conference to be audio only. This limits line rate to a maximum of 128 kbps and disables numerous video settings. If the MCU selected for a conference doesn't support audio-only conferencing, this setting is ignored. To ensure that conferences based on an audio-only template are audio only, do one of the following: • Set the audio-only template's **Line rate** to 64 kbps. • Associate conference rooms (VMRs) that specify the audio-only template with an MCU pool order that contains only MCUs supporting audio-only conferences. If the MCU supports audio-only conferences but audio ports aren't available, video ports are consumed. See the documentation for your RealPresence Collaboration Server or RMX MCU for detailed data regarding audio-only conferences and resource usage.
Advanced Settings	
Encryption	Specifies the media encryption setting for conferences using this template: • No encryption — All endpoints join unencrypted. • Encrypt when possible — Endpoints supporting encryption join encrypted; others join unencrypted. • Encrypt all — Endpoints supporting encryption join encrypted; others can't join. **Note:** VMR dial-outs to H.323 endpoints from an encrypted RealPresence DMA system conference are unsupported and will not connect. **Note:** Prior to v7.2, RMX MCUs supported only encryption settings of On and Off. If such an RMX is selected for a conference, the settings Encrypt when possible or Encrypt all are both converted to On. Consult the MCU's *Administrator's Guide* for the version in question for detailed information about media encryption (SRTP). Media encryption may be required in a maximum security environment.
LPR	Enables *Lost Packet Recovery* for conferences using this template. LPR creates additional packets containing recovery information that can be used to reconstruct packets lost during transmission.
TIP compatibility (v7.6)	Enables compatibility with Cisco's Telepresence Interoperability Protocol, either for video only or for both video and content. Conferences can include both endpoints that don't support TIP and Cisco TelePresence® System (CTS) endpoints. If Prefer TIP is selected, TIP content is used for endpoints that support TIP, and non-TIP content is used with non-TIP endpoints. Requires minimum line rate of 1024 kbps and HD resolution (720 or better). Available only on v7.6 and newer Polycom MCUs.

Field	Description
MS AVMCU cascade mode	When integrated with a Lync 2013 environment, controls behavior of the cascade link with the Lync 2013 AVMCU. • Resource Optimized — The cascade link between the RealPresence DMA system and the Lync 2013 server's AVMCU will be capable of HD video resolutions, which will increase MCU resource usage. • Video Optimized — The cascade link between the RealPresence DMA system and the Lync 2013 server's AVMCU will be limited to SD video resolutions to conserve MCU resources.
FW NAT keep alive	Specifies that when receiving calls through an SBC, the MCU should send media stream keep-alive messages to the SBC at the interval specified.
Interval (seconds)	Specifies how often to send keep-alive messages.
Enable FECC	
Exclusive content mode	
Font for text over video (MPMx only)	Allows you to specify the font type for text displayed to participants in a conference. If using **Default** the system will display Heiti if a Chinese language is configured. **Note**: This property only applies when the MCU is configured for multilingual operation with Chinese (Simplified or Traditional) selected.
RMX Gathering Settings	
Enable gathering (v6)	Enables the gathering phase for conferences using this template. Available only on v6.0 and newer Polycom MCUs. Not available if **Video switching** is selected. This is a time period (configurable on the MCU) at the beginning of a conference when people are connecting. During this time, a slide is displayed that contains conference information, including a list of participants and some information you can specify here.
Displayed language	Language in which the gathering page is displayed.
Access number 1	Optional access numbers to display on the gathering phase slide.
Access number 2	
Info1	Optional free-form text fields to display on the gathering phase slide. Refer to the MCU's *Administrator's Guide* to see an example of the slide and the location and appearance of these fields. On a 16:9 endpoint, a maximum of 96 characters can be displayed for each field, and fewer on a 4:3 endpoint.
Info2	
Info3	

Field	Description
RMX Video Quality	
People Video Definition	
Video quality	Offers two video optimizations: • Motion — higher frame rate • Sharpness — higher resolution Not available if **Conference mode** is set to **SVC only**.
Max resolution (v7)	Enables you to choose a resolution setting that limits the conference to no more than that resolution regardless of the line rate and resolution capabilities of the MCU and endpoints. Auto (the default) imposes no limit. Available only on v7 and newer Polycom MCUs. Not available if **Conference mode** is set to **SVC only**.
Video clarity (MPM+ and MPMx only)	Enables a video enhancement process that improves clarity, edge sharpness, and contrast on streams with resolutions up to and including SD. Available only on Polycom MCUs with MPM+ or MPMx cards. Not available if **Video switching** is selected. Not available if **Conference mode** is set to **SVC only**.
Auto brightness (v7)	Enables automatic balancing of brightness levels to compensate for an endpoint sending a dim image. Available only on v7 and newer Polycom MCUs. Not available if **Conference mode** is set to **SVC only**.
Content Video Definition	
Content settings	The transmission mode for the Content channel: • Graphics — lowest bit rate for basic graphics • High-resolution graphics — higher bit rate for better graphics resolution • Live video — the Content channel is used for live video • Customized content rate — allows you to specify a **Content rate** A higher bit rate for the Content channel reduces the bit rate for the People channel.
Content rate	Bit rate of the content channel. Enabled when the Customized content rate content setting is selected.
AS SIP content	Enables the sharing of content using the AS-SIP protocol security features.
Multiple content resolutions	Enables content sharing over multiple video streams. When selected, you can choose which protocols to use for each stream with the **Transcode to** setting. **Note**: Enabled only when: ◦ **Conference mode** is set to **AVC only**. ◦ **TIP compatibility** is set to either **None** or **Video Only**.
Transcode to	Enables you to choose which protocols to use for each stream of content. Enabled when the **Multiple content resolutions** check box is selected. **Note**: The **H.264** protocol check box is always selected.

Field	Description
Content protocol	Content channel protocol options: • Use H.263. • Use H.264 if available, otherwise use H.263. • Use H.264 cascade and SVC optimized. • Use H.264 HD.
Content resolution	Specifies the resolution of the content channel for the conference and cascade link. Available only when **Content protocol** is set to **H.264 cascade and SVC optimized**.
H.264 high profile	Enables the H.264 High Profile set of capabilities for the content channel, which enables additional compression efficiency and allows for higher resolutions to use the same bandwidth.
Send content to legacy endpoints (MPM+ and MPMx only)	Enables endpoints that don't support H.239 to receive the Content channel over the video (People) channel. Available only on MCUs with MPM+ and MPMx cards. Not available if **Video switching** or **Same layout** is selected, or if **Telepresence mode** is Yes.
RMX Video Settings	
Presentation mode	Enables a conference to change to lecture mode when the current speaker speaks for 30 seconds. When another participant starts talking, it returns to the previous video layout. Not available if **Video switching** or **Same layout** is selected, or if **Telepresence mode** is Yes.
Same layout	Forces the selected layout on all participants. Personal selection of the video layout is disabled. Not available if **Presentation mode** or **Video switching** is selected, or if **Telepresence mode** is Yes.
Lecturer view switching	When in lecture mode, enables the lecturer's view to automatically switch among participants (if the number exceeds the number of windows in the layout) while the lecturer is talking. Not available if **Same layout** is selected or **Telepresence mode** is Yes.
Auto layout	Lets the system select the video layout based on the number of participants in conference. Clear the check box to select a specific layout (below). Not available if **Video switching** is selected or **Telepresence mode** is Yes.
Layout	With **Auto layout** deselected, this opens the **Select Layout** dialog box, where you can select the number and arrangement of video frames. Once a layout is chosen, a small representation of it appears here. See Select Layout Dialog Box on page 216. Not available if **Video switching** is selected.

Field	Description
Telepresence mode (v6)	Support for telepresence conference rooms joining the conference: • Auto (default) — A conference is automatically put into telepresence mode when a telepresence endpoint (RPX, TPX, ATX, or OTX) joins. • On— Telepresence mode is on, regardless of whether a telepresence endpoint is present. • Off— Telepresence mode is off, regardless of whether a telepresence endpoint is present. We recommend always using Auto. Available only on v6.0 and newer Polycom MCUs that are licensed for telepresence mode. For information on Polycom MCU licensing and activation, refer to the MCU's *Getting Started Guide*. **Note:** The system flag ITP_CERTIFICATION must be set to YES. See the information about system flags in the MCU's *Administrator's Guide*.
Telepresence layout mode (v6)	Layout choices for telepresence conferences: • Manual — Layout is controlled manually by a conference operator using the Multipoint Layout Application (MLA) interface. • Continuous Presence — Tells the MLA to generate a multipoint view (standard or custom). • Room Switch — Tells the MLA to use Voice Activated Room Switching (VARS). The speaker's site is the only one seen by others. Not available if **Telepresence mode** is No. See the *Polycom Multipoint Layout Application User Guide* for more information about layouts.
RMX Audio Settings	
Echo suppression	Enables the MCU to detect and suppress echo. Available only on MCUs with MPM+ or MPMx cards.
Keyboard suppression	Enables the MCU to detect and suppress keyboard noise. Available only on MCUs with MPM+ or MPMx cards.
Audio clarity (v7)	Improves the voice quality in conference of a PSTN endpoint. Available only on v7 and newer Polycom MCUs.
Mute participants except lecturer	Enables the MCU to automatically mute all participants except the lecturer upon connection to the conference.
Auto mute noisy endpoints (not applicable to MPM+)	Enables the MCU to automatically detect and mute endpoints that have a noisy audio channel. Not available on MCUs with an MPM+ card.
Speaker change threshold (seconds) (MPMx only)	Allows you to configure the amount of time the MCU requires a participant to speak continuously until becoming the speaker. The default **Auto** setting is 3 seconds.
RMX Skins	Lets you choose the display appearance (skin) for conferences using this template. Not available if **Telepresence mode** is Yes or **Video switching** is enabled.

Field	Description
RMX Conference IVR	
Override default conference IVR service	Links this template to the specific conference IVR service selected in the list below. **Note:** The Polycom MCU conference IVR service is separate and distinct from the RealPresence DMA system's SIP-only shared number dialing feature (see Shared Number Dialing on page 220). For most purposes, this option should not be selected. That enables the system to choose one of two defaults, depending on whether callers need to be prompted for passcodes. If you do select this option, be sure the IVR service you select is appropriate for the users who will use this template. See your Polycom MCU documentation for information about conference IVR services.
Conference IVR service	The list contains the names of all the conference IVR services available on the currently connected MCUs. If an IVR service is only available on some of the connected MCUs, its entry shows how many of the MCUs have that IVR service (for instance, 2 of 3). The system will put conferences using this template on the least used MCU that has the selected conference IVR service. If there are none, it falls back to the default conference IVR service.
Conference requires chairperson	Conferences based on this template don't start until a chairperson joins (callers arriving earlier are placed on hold) and may end when the last chairperson leaves (depending on the MCU configuration). This option is ignored if the user doesn't have a chairperson passcode. For enterprise users, chairperson passcodes can come from the Active Directory. See Adding Passcodes for Enterprise Users on page 162. But you can override the Active Directory value; see Edit User Dialog Box on page 307. For local users, you can add or change chairperson passcodes when you create or edit the users. See Edit User Dialog Box on page 307.
Terminate conference after chairperson drops	If this template is used for a conference with a chairperson passcode, the conference is terminated when the chairperson leaves the conference. A message is played to the remaining participants informing them that the chairperson has left the conference.
RMX Recording	
Record conference	The conference recording setting for this template: • Disabled — Recording isn't available for conferences using this template. • Immediately — Recording starts automatically when the conference starts. • Upon Request — Recording can be initiated manually by the chairperson or an operator. Conference recording requires a Polycom RealPresence Capture Server or RSS recording system and an MCU that supports recording.
Recording link (v7)	Select a specific recording link or the MCU's default. The list contains the names of all recording links available on the connected MCUs, with the number of MCUs that have the link shown in parentheses. Available only on v7 and newer Polycom MCUs.

Field	Description
Audio only	Limits recording to the audio channel of the conference.
Indication of recording	Displays a red dot recording indicator in the upper left corner of the video layout. Available only on v7.1 and newer Polycom MCUs.
Cisco Codian	
Floor and chair control	Specifies how much control conference participants may have: • Do not allow floor or chair control — Participants have no control. • Allow floor control only — A participant may “take the floor.” Everyone sees that participant’s video full-screen. • Allow floor and chair control — A participant may also “take the chair.” The chair can designate whose video everyone sees full-screen. The chair can also disconnect participants. This setting works only in H.323 conferences and only if H.243 Floor and Chair Control is enabled on the MCU. All endpoints must support H.243 chair control.
Automatic lecture mode (4.1)	Enables the MCU to put a conference into lecture mode, either immediately or after the speaker has been talking for the selected interval. In lecture mode, the lecturer (speaker) is displayed full-screen to the other participants. The lecturer sees the normal continuous presence view. Available only on Codian v4.1 MCUs.
Layout control via FECC/DTMF	Enables participants to change their individual layouts using far end camera control, with or without fallback to touchtone commands for endpoints that don’t support FECC. FECC without fallback is available only on Codian v4.1 MCUs.
Mute in-band DTMF (4.1)	Specifies whether the MCU mutes participants’ in-band DTMF (touchtones) so that other participants don’t hear them: • When used for MCU control • Always • Never Available only on Codian v4.1 MCUs.
Allow DTMF *6 to mute audio (4.1)	Enables conference participants to mute themselves using the *6 touchtone command. Available only on Codian v4.1 MCUs.
Content channel video	Enables the conference to support a second video stream for content. This setting works only if Content Status is enabled on the MCU.
Transmitted content resolutions (4.1)	Specifies the aspect ratio used for the content channel. If **Allow all resolutions** is selected, endpoints with a 16:9 aspect ratio receive that, and others receive 4:3. Available only on Codian v4.1 MCUs.

Field	Description
Conference custom layout	Enables the **Conference layout desired** setting, where you can select the number and arrangement of video frames by clicking the image.
Conference layout desired	With Conference custom layout enabled, allows you to select the number and arrangement of video frames by clicking the image. Once a layout is chosen, a small representation of it appears here. See Select Layout Dialog Box on page 216.

See also:

Conference Templates on page 190

Select Layout Dialog Box on page 216

Conference Templates Procedures on page 216

Edit Conference Template Dialog Box

Lets you edit a conference template. The following table describes the fields in the dialog box. The **Common Settings** section applies to all MCUs. The **Cisco Codian** section appears only if the system is licensed to use Cisco Codian MCUs, and its settings apply only if a Codian MCU is selected for the call. The other sections apply only if a Polycom RealPresence Collaboration Server or RMX MCU is selected.

Field	Description
Common Settings	
Name	A meaningful name for the template (up to 50 characters).
Description	A brief description of the conference template (up to 50 characters).
RMX General Settings	
RMX Profile Settings	See Two Types of Templates on page 190.
Use existing profile	Links this template to the RMX profile selected in the list below. For most purposes, we recommend leaving this box unchecked and specifying conference properties directly. See Conference Templates on page 190.
RMX profile name	Identifies the profile to which this template is linked. The list contains the names of all the profiles available on the currently connected MCUs. If a profile is only available on some of the connected MCUs, its entry shows how many of the MCUs have that profile (for instance, 2 of 3). The system will put conferences using this template on the least used MCU that has this profile. If there are none, it selects the least-used MCU and either uses the Codian-specific settings (if it selected a Cisco Codian MCU) or falls back to the default conference template (if it selected a Polycom MCU).

Field	Description
Conference Settings	
Conference mode	One of the following: • *AVC only* — Standard video conferencing mode supporting the H.264 Advanced Video Coding (AVC) compression standard. In an AVC conference, the MCU transcodes the video stream to each device in the conference to provide an optimal experience, based on its capabilities. This is the only mode that supports the use of Polycom MCU profiles, third-party and legacy endpoints, and Codian and legacy RMX MCUs. • *SVC only* — video conferencing mode supporting the Annex G extension of the H.264 standard, known as H.264 Scalable Video Coding (SVC). An SVC video stream consists of a base layer stream that encodes the lowest available quality representation plus optional enhancement layer streams that each provide an additional quality improvement. The MCU passes the video streams from each device to each device. The number of enhancement layer streams sent to a device can be tailored to fit the bandwidth available and device capabilities. SVC conferencing is only possible with Polycom MCUs and endpoints that support H.264 SVC. Selecting this setting disables most of the other template settings. • *Mixed AVC and SVC* — Enables both AVC-only endpoints and endpoints supporting SVC to join the conference. If the selected MCU doesn't support SVC, the conference is started in AVC mode. **Note:** If the MCU supports SVC but not mixed mode (RMX 7.8), the conference fails to start. See SVC Conferencing Support on page 17. See also the documentation for your RealPresence Collaboration Server or RMX MCU.
Conference mode experience	For mixed conference mode, specifies the video experience optimization strategy the MCU should implement. The experience optimization strategy determines the quality of the video streams that SVC participants receive from AVC participants. See the documentation for your RealPresence Collaboration Server or RMX MCU for detailed data regarding the resolutions each experience setting supports for various ranges of line rate. **Note:** All AVC callers must be capable of sending at a line rate available for the experience setting. SVC participants receive the same stream quality from all AVC endpoints, regardless of their individual capabilities.
Cascade for bandwidth	Enables conferences using this template to span Polycom MCUs to conserve network bandwidth. Cascading for bandwidth requires site topology information, which the Polycom RealPresence DMA system can get from a Polycom RealPresence Resource Manager or CMA system (see Resource Management System Integration on page 178) or you can create (see Site Topology on page 278). This option and **Cascade for size** are mutually exclusive. See About Cascading on page 193 for more information about enabling cascading of conferences.

Field	Description
Cascade for size	Enables conferences using this template to span Polycom MCUs to achieve conference sizes larger than a single MCU can accommodate. This option and **Cascade for bandwidth** are mutually exclusive. See About Cascading on page 193 for more information about enabling cascading of conferences.
Video switching (VSW)	Enables a special conferencing mode that provides HD video while using MCU resources more efficiently. All participants see the current speaker full screen (the current speaker sees the previous speaker). If this mode is enabled: • The minimum line rate available is 768 kbps (except for SD resolution, available only on v7 and newer Polycom MCUs with MPM+ or MPMx cards). • All endpoints must connect at the same line rate, and those that don't support the specified line rate are connected in voice-only mode. • The video clarity, layout, and skins settings are not available. • LPR is automatically turned off, but can be turned back on. If this option is off, conferences using this template are in Continuous Presence (CP) mode, in which the MCU selects the best video protocol, resolution, and frame rate for each endpoint according to its capabilities.
H.264 high profile (v7.6)	Sets a VSW conference to use Polycom's bandwidth-conserving H.264 High Profile codec (previously supported only in continuous presence mode). If this is selected, all endpoints in the conference must support High Profile. Endpoints not connecting at the conference's exact line rate and resolution are connected in audio-only mode. Available only on v7.6 and newer Polycom MCUs with MPMx cards.
Resolution	Available only if **Video switching** is selected. Offers the following resolution settings: • H.264 1080p30 (available only on Polycom MCUs with MPM+ or MPMx cards) • H.264 720p30 • H.264 720p60 (available only on Polycom MCUs with MPM+ or MPMx cards) • H.264 SD 30 (available only on Polycom MCUs with MPM+ or MPMx cards) • H.264 1080p60 (available only on the RealPresence Collaboration Server 1800 MCU or Polycom MCUs with MPMRx cards)

Field	Description
Line rate	The maximum bit rate at which endpoints can connect to conferences using this template. If **Video switching** is selected, the minimum line rate is 768 kbps (except for SD resolution, available only on v7 and newer Polycom MCUs with MPM+ or MPMx cards).
Audio only	Sets the conference to be audio only. This limits line rate to a maximum of 128 kbps and disables numerous video settings. If the MCU selected for a conference doesn't support audio-only conferencing, this setting is ignored. To ensure that conferences based on an audio-only template are audio only, do one of the following: • Set the audio-only template's **Line rate** to 64 kbps. • Associate conference rooms (VMRs) that specify the audio-only template with an MCU pool order that contains only MCUs supporting audio-only conferences. If the MCU supports audio-only conferences but audio ports aren't available, video ports are consumed. See the documentation for your RealPresence Collaboration Server or RMX MCU for detailed data regarding audio-only conferences and resource usage.
Advanced Settings	
Encryption	Specifies the media encryption setting for conferences using this template: • No encryption — All endpoints join unencrypted. • Encrypt when possible — Endpoints supporting encryption join encrypted; others join unencrypted. • Encrypt all — Endpoints supporting encryption join encrypted; others can't join. **Note:** VMR dial-outs to H.323 endpoints from an encrypted RealPresence DMA system conference are unsupported and will not connect. **Note:** Prior to v7.2, RMX MCUs supported only encryption settings of On and Off. If such an RMX is selected for a conference, the settings Encrypt when possible or Encrypt all are both converted to On. Consult the MCU's *Administrator's Guide* for the version in question for detailed information about media encryption (SRTP). Media encryption may be required in a maximum security environment.
LPR	Enables *Lost Packet Recovery* for conferences using this template. LPR creates additional packets containing recovery information that can be used to reconstruct packets lost during transmission.
TIP compatibility (v7.6)	Enables compatibility with Cisco's Telepresence Interoperability Protocol, either for video only or for both video and content. Conferences can include both endpoints that don't support TIP and Cisco TelePresence® System (CTS) endpoints. If Prefer TIP is selected, TIP content is used for endpoints that support TIP, and non-TIP content is used with non-TIP endpoints. Requires minimum line rate of 1024 kbps and HD resolution (720 or better). Available only on v7.6 and newer Polycom MCUs.

Field	Description
MS AVMCU cascade mode	When integrated with a Lync 2013 environment, controls behavior of the cascade link with the Lync 2013 AVMCU. • Resource Optimized — The cascade link between the RealPresence DMA system and the Lync 2013 server's AVMCU will be capable of HD video resolutions, which will increase MCU resource usage. • Video Optimized — The cascade link between the RealPresence DMA system and the Lync 2013 server's AVMCU will be limited to SD video resolutions to conserve MCU resources.
FW NAT keep alive	Specifies that when receiving calls through an SBC, the MCU should send media stream keep-alive messages to the SBC at the interval specified.
Interval (seconds)	Specifies how often to send keep-alive messages.
Enable FECC	
Exclusive content mode	
Font for text over video (MPMx only)	Allows you to specify the font type for text displayed to participants in a conference. If using **Default** the system will display Heiti if a Chinese language is configured. **Note**: This property only applies when the MCU is configured for multilingual operation with Chinese (Simplified or Traditional) selected.
RMX Gathering Settings	
Enable gathering (v6)	Enables the gathering phase for conferences using this template. Available only on v6.0 and newer Polycom MCUs. Not available if **Video switching** is selected. This is a time period (configurable on the MCU) at the beginning of a conference when people are connecting. During this time, a slide is displayed that contains conference information, including a list of participants and some information you can specify here.
Displayed language	Language in which the gathering page is displayed.
Access number 1	Optional access numbers to display on the gathering phase slide.
Access number 2	
Info1	Optional free-form text fields to display on the gathering phase slide. Refer to the MCU's *Administrator's Guide* to see an example of the slide and the location and appearance of these fields. On a 16:9 endpoint, a maximum of 96 characters can be displayed for each field, and fewer on a 4:3 endpoint.
Info2	
Info3	

Field	Description
RMX Video Quality	
People Video Definition	
Video quality	Offers two video optimizations: • Motion — higher frame rate • Sharpness — higher resolution Not available if **Conference mode** is set to **SVC only**.
Max resolution (v7)	Enables you to choose a resolution setting that limits the conference to no more than that resolution regardless of the line rate and resolution capabilities of the MCU and endpoints. Auto (the default) imposes no limit. Available only on v7 and newer Polycom MCUs. Not available if **Conference mode** is set to **SVC only**.
Video clarity (MPM+ and MPMx only)	Enables a video enhancement process that improves clarity, edge sharpness, and contrast on streams with resolutions up to and including SD. Available only on Polycom MCUs with MPM+ or MPMx cards. Not available if **Video switching** is selected. Not available if **Conference mode** is set to **SVC only**.
Auto brightness (v7)	Enables automatic balancing of brightness levels to compensate for an endpoint sending a dim image. Available only on v7 and newer Polycom MCUs. Not available if **Conference mode** is set to **SVC only**.
Content Video Definition	
Content settings	The transmission mode for the Content channel: • Graphics — lowest bit rate for basic graphics • High-resolution graphics — higher bit rate for better graphics resolution • Live video — the Content channel is used for live video • Customized content rate — allows you to specify a **Content rate** A higher bit rate for the Content channel reduces the bit rate for the People channel.
Content rate	Bit rate of the content channel. Enabled when the Customized content rate content setting is selected.
AS SIP content	Enables the sharing of content using the AS-SIP protocol security features.
Multiple content resolutions	Enables content sharing over multiple video streams. When selected, you can choose which protocols to use for each stream with the **Transcode to** setting. **Note**: Enabled only when: ➢ **Conference mode** is set to **AVC only**. ➢ **TIP compatibility** is set to either **None** or **Video Only**.
Transcode to	Enables you to choose which protocols to use for each stream of content. Enabled when the **Multiple content resolutions** check box is selected. **Note**: The **H.264** protocol check box is always selected.

Field	Description
Content protocol	Content channel protocol options: • Use H.263. • Use H.264 if available, otherwise use H.263. • Use H.264 cascade and SVC optimized. • Use H.264 HD.
Content resolution	Specifies the resolution of the content channel for the conference and cascade link. Available only when **Content protocol** is set to **H.264 cascade and SVC optimized**.
H.264 high profile	Enables the H.264 High Profile set of capabilities for the content channel, which enables additional compression efficiency and allows for higher resolutions to use the same bandwidth.
Send content to legacy endpoints (MPM+ and MPMx only)	Enables endpoints that don't support H.239 to receive the Content channel over the video (People) channel. Available only on MCUs with MPM+ and MPMx cards. Not available if **Video switching** or **Same layout** is selected, or if **Telepresence mode** is Yes.
RMX Video Settings	
Presentation mode	Enables a conference to change to lecture mode when the current speaker speaks for 30 seconds. When another participant starts talking, it returns to the previous video layout. Not available if **Video switching** or **Same layout** is selected, or if **Telepresence mode** is Yes.
Same layout	Forces the selected layout on all participants. Personal selection of the video layout is disabled. Not available if **Presentation mode** or **Video switching** is selected, or if **Telepresence mode** is Yes.
Lecturer view switching	When in lecture mode, enables the lecturer's view to automatically switch among participants (if the number exceeds the number of windows in the layout) while the lecturer is talking. Not available if **Same layout** is selected or **Telepresence mode** is Yes.
Auto layout	Lets the system select the video layout based on the number of participants in conference. Clear the check box to select a specific layout (below). Not available if **Video switching** is selected or **Telepresence mode** is Yes.
Layout	With **Auto layout** deselected, this opens the **Select Layout** dialog box, where you can select the number and arrangement of video frames. Once a layout is chosen, a small representation of it appears here. See Select Layout Dialog Box on page 216. Not available if **Video switching** is selected.

Field	Description
Telepresence mode (v6)	Support for telepresence conference rooms joining the conference: • Auto (default) — A conference is automatically put into telepresence mode when a telepresence endpoint (RPX, TPX, ATX, or OTX) joins. • On— Telepresence mode is on, regardless of whether a telepresence endpoint is present. • Off— Telepresence mode is off, regardless of whether a telepresence endpoint is present. We recommend always using Auto. Available only on v6.0 and newer Polycom MCUs that are licensed for telepresence mode. For information on Polycom MCU licensing and activation, refer to the MCU's *Getting Started Guide*. **Note:** The system flag ITP_CERTIFICATION must be set to YES. See the information about system flags in the MCU's *Administrator's Guide*.
Telepresence layout mode (v6)	Layout choices for telepresence conferences: • Manual — Layout is controlled manually by a conference operator using the Multipoint Layout Application (MLA) interface. • Continuous Presence — Tells the MLA to generate a multipoint view (standard or custom). • Room Switch — Tells the MLA to use Voice Activated Room Switching (VARS). The speaker's site is the only one seen by others. Not available if **Telepresence mode** is No. See the *Polycom Multipoint Layout Application User Guide* for more information about layouts.
RMX Audio Settings	
Echo suppression	Enables the MCU to detect and suppress echo. Available only on MCUs with MPM+ or MPMx cards.
Keyboard suppression	Enables the MCU to detect and suppress keyboard noise. Available only on MCUs with MPM+ or MPMx cards.
Audio clarity (v7)	Improves the voice quality in conference of a PSTN endpoint. Available only on v7 and newer Polycom MCUs.
Mute participants except lecturer	Enables the MCU to automatically mute all participants except the lecturer upon connection to the conference.
Auto mute noisy endpoints (not applicable to MPM+)	Enables the MCU to automatically detect and mute endpoints that have a noisy audio channel. Not available on MCUs with an MPM+ card.
Speaker change threshold (seconds) (MPMx only)	Allows you to configure the amount of time the MCU requires a participant to speak continuously until becoming the speaker. The default **Auto** setting is 3 seconds.
RMX Skins	Lets you choose the display appearance (skin) for conferences using this template. Not available if **Telepresence mode** is Yes or **Video switching** is enabled.

Field	Description
RMX Conference IVR	
Override default conference IVR service	Links this template to the specific conference IVR service selected in the list below. **Note:** The Polycom MCU conference IVR service is separate and distinct from the RealPresence DMA system's SIP-only shared number dialing feature (see Shared Number Dialing on page 220). For most purposes, this option should not be selected. That enables the system to choose one of two defaults, depending on whether callers need to be prompted for passcodes. If you do select this option, be sure the IVR service you select is appropriate for the users who will use this template. See your Polycom MCU documentation for information about conference IVR services.
Conference IVR service	The list contains the names of all the conference IVR services available on the currently connected MCUs. If an IVR service is only available on some of the connected MCUs, its entry shows how many of the MCUs have that IVR service (for instance, 2 of 3). The system will put conferences using this template on the least used MCU that has the selected conference IVR service. If there are none, it falls back to the default conference IVR service.
Conference requires chairperson	Conferences based on this template don't start until a chairperson joins (callers arriving earlier are placed on hold) and may end when the last chairperson leaves (depending on the MCU configuration). This option is ignored if the user doesn't have a chairperson passcode. For enterprise users, chairperson passcodes can come from the Active Directory. See Adding Passcodes for Enterprise Users on page 162. But you can override the Active Directory value; see Edit User Dialog Box on page 307. For local users, you can add or change chairperson passcodes when you create or edit the users. See Edit User Dialog Box on page 307.
Terminate conference after chairperson drops	If this template is used for a conference with a chairperson passcode, the conference is terminated when the chairperson leaves the conference. A message is played to the remaining participants informing them that the chairperson has left the conference.
RMX Recording	
Record conference	The conference recording setting for this template: • Disabled — Recording isn't available for conferences using this template. • Immediately — Recording starts automatically when the conference starts. • Upon Request — Recording can be initiated manually by the chairperson or an operator. Conference recording requires a Polycom RealPresence Capture Server or RSS recording system and an MCU that supports recording.
Recording link (v7)	Select a specific recording link or the MCU's default. The list contains the names of all recording links available on the connected MCUs, with the number of MCUs that have the link shown in parentheses. Available only on v7 and newer Polycom MCUs.

Field	Description
Audio only	Limits recording to the audio channel of the conference.
Indication of recording	Displays a red dot recording indicator in the upper left corner of the video layout. Available only on v7.1 and newer Polycom MCUs.
Cisco Codian	
Floor and chair control	Specifies how much control conference participants may have: • Do not allow floor or chair control — Participants have no control. • Allow floor control only — A participant may “take the floor.” Everyone sees that participant’s video full-screen. • Allow floor and chair control — A participant may also “take the chair.” The chair can designate whose video everyone sees full-screen. The chair can also disconnect participants. This setting works only in H.323 conferences and only if H.243 Floor and Chair Control is enabled on the MCU. All endpoints must support H.243 chair control.
Automatic lecture mode (4.1)	Enables the MCU to put a conference into lecture mode, either immediately or after the speaker has been talking for the selected interval. In lecture mode, the lecturer (speaker) is displayed full-screen to the other participants. The lecturer sees the normal continuous presence view. Available only on Codian v4.1 MCUs.
Layout control via FECC/DTMF	Enables participants to change their individual layouts using far end camera control, with or without fallback to touchtone commands for endpoints that don’t support FECC. FECC without fallback is available only on Codian v4.1 MCUs.
Mute in-band DTMF (4.1)	Specifies whether the MCU mutes participants’ in-band DTMF (touchtones) so that other participants don’t hear them: • When used for MCU control • Always • Never Available only on Codian v4.1 MCUs.
Allow DTMF *6 to mute audio (4.1)	Enables conference participants to mute themselves using the *6 touchtone command. Available only on Codian v4.1 MCUs.
Content channel video	Enables the conference to support a second video stream for content. This setting works only if Content Status is enabled on the MCU.
Transmitted content resolutions (4.1)	Specifies the aspect ratio used for the content channel. If **Allow all resolutions** is selected, endpoints with a 16:9 aspect ratio receive that, and others receive 4:3. Available only on Codian v4.1 MCUs.

Field	Description
Conference custom layout	Enables the **Conference layout desired** setting, where you can select the number and arrangement of video frames by clicking the image.
Conference layout desired	With Conference custom layout enabled, allows you to select the number and arrangement of video frames by clicking the image. Once a layout is chosen, a small representation of it appears here. See Select Layout Dialog Box on page 216.

See also:

Conference Templates on page 190

Conference Templates Procedures on page 216

Select Layout Dialog Box

Lets you select a specific conference layout when you're adding or editing a conference template.

To select a video frames layout

1. Click the radio button next to the layout you want.
2. Click **OK**.

See also:

Conference Templates on page 190

Add Conference Template Dialog Box on page 196

Edit Conference Template Dialog Box on page 206

Conference Templates Procedures

To view the Conference Templates list

» Go to **Admin > Conference Manager > Conference Templates**.

The **Conference Templates** list appears.

To add a conference template not linked to a RealPresence Collaboration Server or RMX profile

1. Go to **Admin > Conference Manager > Conference Templates**.
2. In the **Actions** list, click **Add**.
3. In the **Add Conference Template** dialog box, specify all the conference properties for this template:
   a. In **Common Settings**, enter an appropriate name and description.
   b. Complete the remaining sections as desired. See Add Conference Template Dialog Box on page 196.
4. Click **OK**.

   The new template appears in the **Conference Templates** list.

To add a conference template linked to a RealPresence Collaboration Server or RMX profile

1. Go to **Admin > Conference Manager > Conference Templates**.
2. In the **Actions** list, click **Add**.
3. In the **Add Conference Template** dialog box, specify all the conference properties for this template:
   a. In **Common Settings**, enter an appropriate name and description.
   b. Click the **RMX General Settings** tab.
   c. Check **Use existing profile** and select the one you want from the **RMX profile name** list.

      The list contains the profiles available on the RealPresence Collaboration Server and RMX MCUs that have been added to the Polycom RealPresence DMA system. If no MCUs have been added to the system, the list is disabled.
4. Click **OK**.

   The new template appears in the **Conference Templates** list.

To edit a conference template

1. Go to **Admin > Conference Manager > Conference Templates**.
2. In the **Conference Templates** list, select the template of interest, and in the **Actions** list, click **Edit**.
3. In the **Edit Conference Template** dialog box, edit the settings as desired. See Edit Conference Template Dialog Box on page 206.
4. Click **OK**.

   The template changes appear in the **Conference Templates** list.

To change a conference template's priority

1. Go to **Admin > Conference Manager > Conference Templates**.
2. On the **Conference Templates** list, select the template whose priority you want to change.
3. In the **Actions** list, select **Move Up** or **Move Down**, depending on whether you want to increase or decrease the template's priority ranking.

   When a user is associated with multiple templates, the system uses the highest priority template. We recommend moving the system default template to the bottom of the list.
4. Repeat until the template has the desired ranking.

To delete a conference template

1. Go to **Admin > Conference Manager > Conference Templates**.
2. In the **Conference Templates** list, select the template you want to delete, and in the **Actions** list, click **Delete**.
3. When asked to confirm that you want to delete the template, click **Yes**.

   Any conference rooms or enterprise groups that used the template are reset to use the system default template.

See also:

Conference Templates on page 190

Add Conference Template Dialog Box on page 196

Edit Conference Template Dialog Box on page 206

IVR Prompt Sets

A prompt set contains a set of media files (audio prompts and video slides) that provide the caller experience for a RealPresence DMA-controlled IVR service. The RealPresence DMA system comes with a factory default call flow and corresponding prompt set. You can customize the IVR experience (in terms of language or branding) associated with the call flow by installing custom prompt sets and creating RealPresence DMA-controlled VEQs that use those prompt sets (see Shared Number Dialing on page 220).

A prompt set is an archive (.zip) file containing:

- A directory, META-INF, containing a single file, MANIFEST.MF. This is a text file describing the prompt set. It contains name:value attribute pairs separated by newlines. Currently, the RealPresence DMA system checks the following attribute names for valid values:
  - **Appname** identifies the call flow associated with this prompt set. Currently, “dma7000” is the only valid value.
  - **Format** describes the encoding of the audio prompts. Currently, “PCM 16Khz 16bit Mono” is the only valid value.
  - **Language** describes the language of the audio prompts and video slides. This may be any value.
  - **Promptset** is the name of the prompt set. This value must be unique across all prompt set .zip files.

Note: Manifest Format

The manifest file ***must not*** contain the attribute names **Format** and **Language**.

- A collection of .wav and .jpg files with the individual audio prompts and video slides.

  The .wav files should be encoded in PCM 16 Khz 16-bit mono format, and the file names must be exactly the same as in the default prompt set. If a custom prompt set is missing the .wav file for a specific prompt in the call flow, the RealPresence DMA system substitutes the corresponding prompt from the factory default prompt set.

  The .jpg files should be 1920x1088 pixels, and the file names must be exactly the same as in the default prompt set. If a custom prompt set is missing a .jpg file, the RealPresence DMA system substitutes the corresponding one from the factory default prompt set.

Note: No Media File Format Validation

The RealPresence DMA system doesn’t examine the contents of the media files to validate the format.

The call flow currently uses only one video slide, General_Slide.jpg. The following table lists the audio prompt files it uses.

Prompt File Name	Prompt Text
Chairperson_Identifier.wav	For conference chairperson services, enter the chairperson password. All other participants, please wait.
Chairperson_PIN_Invalid.wav	Invalid chairperson password.
Chairperson_PIN_Invalid_Retry.wav	Invalid chairperson password. Please try again.
Conference_Full.wav	The conference is full. You cannot join at this time.
Conference_Locked.wav	The conference is locked. You cannot join at this time.
Conference_NID.wav	Please enter the conference ID.
Conference_NID_Invalid.wav	Invalid conference ID.
Conference_NID_Invalid_Retry.wav	Invalid conference ID. Please try again.
Conference_PIN.wav	Please enter the conference password.
Conference_PIN_Invalid.wav	Invalid conference password.
Conference_PIN_Invalid_Retry.wav	Invalid conference password. Please try again.
Disconnect.wav	You will now be disconnected.
General_Welcome.wav	Welcome to unified conferencing.
No_Resources_Available.wav	Sorry, the system is full.
Operator_Transfer.wav	You will now be transferred to the operator.
Operator_Transfer_Cancelable.wav	Press any key to cancel.

On the **IVR Prompt Sets** page, you can:

- Add a custom prompt set. The system validates the **Appname** and **Promptset** values in the manifest file of the prompt set archive you select for uploading.
- See information about the selected prompt set, including a list of the media files it includes.
- Delete the selected custom prompt set (but not the default prompt set or a prompt set assigned to a RealPresence DMA-controlled VEQ).

The following table describes the parts of the **IVR Prompt Sets** page.

Field	Description
Archive File Name	The name of the archive (.zip) file containing the prompt set.
Prompt Set Name	The name of the prompt set as specified in the manifest file.

Field	Description
Prompt Set Details	Displays the following information about the selected prompt set: • Prompt set and archive names. • Application name (currently always **dma7000**). • Archive checksum (to verify validity) • Number of media files (.wav and .jpg) in the prompt set.
Included Media Status	Lists the media files in the prompt set, the IVR call flow, or both. The icon to the left shows the status of each. Hover over a file to see an explanation of the status.

See also:

Conference Settings on page 185

Conference Templates on page 190

Shared Number Dialing

The **Shared Number Dialing** page enables you to configure the system to handle SIP calls to certain shared numbers (virtual entry queues) by routing them to an appropriate Polycom RealPresence Collaboration Server or RMX MCU entry queue. Depending on the MCU type and version, Polycom MCUs can have two kinds of entry queues for providing callers with interactive voice response (IVR) services:

- MCU-controlled entry queues — The prompts, slides, and call flow providing the IVR experience reside on the MCU. Polycom MCUs refer to these as “IVR-only service provider” entry queues.
- RealPresence DMA-controlled entry queues (referred to as “External IVR control entry queues” on supporting MCUs because the IVR control is external to the MCU) — The prompts, slides, and call flow providing the IVR experience reside on the RealPresence DMA system (see IVR Prompt Sets on page 218).

A virtual entry queue (VEQ) connected to either type of MCU entry queue enables you to publicize a shared number that can be used to reach multiple conferences, or virtual meeting rooms (VMRs). When a caller dials the shared number, the RealPresence DMA system routes the call to an MCU with the resources and capability to provide the IVR experience associated with the shared number.

This feature is analogous to the behavior of conference entry queues on the Polycom RealPresence Collaboration Server or RMX MCU (see About Conference IVR Services on page 192), extending it to the RealPresence DMA environment where both the IVR experience and the conference can take place on any of the qualified MCUs available to the RealPresence DMA system.

Note: Shared Number Dialing is a SIP-Only Feature

Shared number dialing is a SIP-only feature. Only numeric VMRs are supported. MCU-controlled VEQs require v7.0.2 or newer Polycom MCUs. RealPresence DMA-controlled VEQs require v8.1 or newer Polycom MCUs.

The call flow works as follows:

1 Callers dial a shared number to reach the Polycom RealPresence DMA system.

2 The Polycom RealPresence DMA system recognizes the dialed number as a VEQ number and routes the call to a Polycom RealPresence Collaboration Server or RMX MCU configured to provide the IVR experience (MCU-controlled or RealPresence DMA-controlled) that's associated with the VEQ number dialed.

Note: Valid "Speed Dial" Formats

For RealPresence DMA-controlled VEQ numbers, the RealPresence DMA system recognizes two "speed dial" SIP dial string formats:

- `<veq number>**<vmr number>` — The system validates the VMR number. If it's valid, the caller bypasses the prompt for the destination conference. If the VMR has a conference passcode (PIN), chairperson passcode, or both, the system prompts for and validates the passcode.

`<veq number>**<vmr number>**<passcode>` — The system validates the VMR number, and if it's valid, the passcode. If both are valid, the caller bypasses both prompts and is placed directly into conference.

3 If this is an MCU-controlled entry queue:

a The MCU uses its call flow, voice prompts, and video slides, prompting the caller for the VMR number of the destination conference and sending the response back to the Polycom RealPresence DMA system for validation.

b The Polycom RealPresence DMA system validates the VMR number entered by the caller.

If the number is invalid, the RealPresence DMA system instructs the MCU to re-prompt the caller. The number of retries is configurable.

c If the caller entered a valid VMR number, the RealPresence DMA system routes the call to the conference (selecting an appropriate MCU and starting the conference if necessary). Prompting for a passcode, if needed, is handled by the conference IVR service assigned to the conference template, if any, or the default conference IVR service.

4 If this is a RealPresence DMA-controlled entry queue:

a The Polycom RealPresence DMA system uses its call flow, voice prompts, and video slides, sending commands to the MCU to control the interaction with the caller (display slides, play prompts, collect tones, etc.).

b The Polycom RealPresence DMA system validates the VMR number entered by the caller.

If the caller entered an invalid number, the RealPresence DMA system instructs the MCU to re-prompt the caller. The number of retries is configurable. If the caller fails to enter a valid number or enters the (configurable) operator request command, the RealPresence DMA system routes the call to the operator (help desk) SIP URI.

c If the conference has a conference passcode (PIN), chairperson passcode, or both, the RealPresence DMA system instructs the MCU to prompt for and collect the passcode. The RealPresence DMA system validates the passcode entered by the caller.

If the caller entered an invalid passcode, the RealPresence DMA system instructs the MCU to re-prompt the caller. The number of retries is configurable. If the caller fails to enter a valid passcode or enters the (configurable) operator request command, the RealPresence DMA system routes the call to the operator (help desk) SIP URI.

d If the caller entered a valid passcode, the RealPresence DMA system routes the call to the conference (selecting an appropriate MCU and starting the conference if necessary), assigning the caller the appropriate role (chairperson or participant).

The default dial plan contains a dial rule that routes calls whose dialed number is a VEQ dial-in number to the correct VEQ.

You can create up to 60 different VEQs to provide different IVR experiences (for instance, different language prompts or different greetings). You can designate one of the MCU-controlled VEQs as the *Direct Dial* VEQ, and the system will use it for calls dialed without a VEQ or VMR number. For instance, if a call's dial string includes only the system's domain name or IP address, the Polycom RealPresence DMA system uses the Direct Dial VEQ for it.

For MCU-controlled VEQs, to create a unique experience, you must create the corresponding entry queue on the RealPresence Collaboration Server and RMX MCUs to be used.

For RealPresence DMA-controlled VEQs, the MCU's entry queue must be one of its "External IVR Entry Queues." The prompt set for the VEQ must be installed on the RealPresence DMA system (see IVR Prompt Sets on page 218). Different "External IVR Entry Queues" can be created on the MCUs to provide different profiles (bit rate, resolution, etc.) for the pre-conference phase, but most of the entry queue experience (language, prompts, retries, and timers) is defined by the RealPresence DMA-controlled VEQ.

Note: Configuring MCUs for Shared Number Dialing

The entry queues created for shared number dialing VEQs must have the **IVR only service provider** setting selected. See your Polycom MCU documentation.

When selecting an MCU to handle IVR for a VEQ, the Polycom RealPresence DMA system chooses from among those that have the entry queue specified for that VEQ, without regard to MCU pool orders.

As with conference profiles, it's up to you to ensure that the entry queue is available on the MCUs to be used and that it's the same on each MCU.

The **Shared Number Dialing** page lists the VEQs available on the system and enables you to add, edit and delete VEQs. The following table describes the fields on the page.

Field	Description
Virtual Entry Queue	The VEQ number, such as *12345*, or *Direct Dial*.
Dial-In #	The complete dial string, for this VEQ. For instance, if the system uses the prefix 71, this might be *7112345*.
Description	Typically, a description of the IVR experience, such as which language is used.
Response Entry Attempts	The number of times a caller can enter an invalid VMR number before the system rejects the call.
RMX Entry Queue	The name of the RealPresence Collaboration Server or RMX entry queue (IVR experience) to be used for callers to this VEQ.
Entry Queue Type	Type of entry queue.
IVR Prompt Set	For a RealPresence DMA-controlled VEQ, the name of the IVR prompt set the VEQ uses (see IVR Prompt Sets on page 218).

See also:

Add Direct Dial Virtual Entry Queue Dialog Box on page 224
Edit Virtual Entry Queue Dialog Box on page 224
Edit Direct Dial Virtual Entry Queue Dialog Box on page 225
Conference Templates on page 190
Conference Settings on page 185
IVR Prompt Sets on page 218

Add Virtual Entry Queue Dialog Box

Lets you add a virtual entry queue (VEQ) to the list of configured VEQs on the **Shared Number Dialing** page. The table below describes the fields in the dialog box.

Field	Description
Virtual entry queue number	The VEQ number.
Dial-in number	Number used to dial into the VEQ. Automatically set to the dialing prefix (see Conference Settings on page 185) plus VEQ number.
Description	A meaningful description for this VEQ and its IVR experience, such as which language is used.
Response entry attempts	The number of times a caller can enter an invalid VMR number before the system rejects the call.
RMX entry queue	The RealPresence Collaboration Server or RMX entry queue to use for this VEQ. The list includes all entry queues available on the Polycom MCUs connected to the system, with the number of MCUs that have each entry queue shown in parentheses. **Note:** Polycom MCUs refer to entry queues designed for a RealPresence DMA-controlled VEQ as “External IVR” because RealPresence DMA-based IVR control is external to the MCU.
RealPresence DMA-based IVR Call Flow (only for “External IVR control” entry queues)	
IVR prompt set	For a RealPresence DMA-controlled VEQ, the prompt set to be used. The list includes all those installed on the RealPresence DMA system (see IVR Prompt Sets on page 218).
Timeout for response entry (sec)	The length of time that the RealPresence DMA system waits for a caller to respond to a prompt (5-60 seconds).
DTMF terminator	The terminator used to mark the end of caller input.
Operator assistance URI	The SIP URI to which to route the call for operator (help desk) assistance.

Field	Description
Request operator transfer DTMF	The DTMF command for requesting an operator. **Note:** If this digit string matches a VMR number, that VMR becomes unreachable.
Timeout to cancel operator request (sec)	The length of time after requesting an operator that a caller is given to cancel that request (1-10 seconds). **Note:** An operator request can be canceled by entering any DTMF key.

See also:

Shared Number Dialing on page 220

Add Direct Dial Virtual Entry Queue Dialog Box

Lets you add a direct dial virtual entry queue (VEQ) to the list of configured VEQs on the **Shared Number Dialing** page. The table below describes the fields in the dialog box.

Field	Description
Description	A meaningful description for this VEQ and its IVR experience, such as *Direct Dial - English*.
Response entry attempts	The number of times a caller can enter an invalid VMR number before the system rejects the call.
RMX entry queue	The RealPresence Collaboration Server or RMX entry queue to use for this VEQ. The list includes all entry queues available on the Polycom MCUs connected to the system, with the number of MCUs that have each entry queue shown in parentheses.

See also:

Shared Number Dialing on page 220

Edit Virtual Entry Queue Dialog Box

Lets you edit the virtual entry queue (VEQ) selected on the **Shared Number Dialing** page. The table below describes the fields in the dialog box.

Field	Description
Virtual entry queue number	The VEQ number.
Dial-in number	Number used to dial into the VEQ. Automatically set to the dialing prefix (see Conference Settings on page 185) plus VEQ number.
Description	A meaningful description for this VEQ and its IVR experience, such as which language is used.
Response entry attempts	The number of times a caller can enter an invalid VMR number before the system rejects the call.

Field	Description
RMX entry queue	The RealPresence Collaboration Server or RMX entry queue to use for this VEQ. The list includes all entry queues available on the Polycom MCUs connected to the system, with the number of MCUs that have each entry queue shown in parentheses. **Note:** Polycom MCUs refer to entry queues designed for a RealPresence DMA-controlled VEQ as “External IVR” because RealPresence DMA-based IVR control is external to the MCU.
RealPresence DMA-based IVR Call Flow (only for “External IVR control” entry queues)	
IVR prompt set	For a RealPresence DMA-controlled VEQ, the prompt set to be used. The list includes all those installed on the RealPresence DMA system (see IVR Prompt Sets on page 218).
Timeout for response entry (sec)	The length of time that the RealPresence DMA system waits for a caller to respond to a prompt (5-60 seconds).
DTMF terminator	The terminator used to mark the end of caller input.
Operator assistance URI	The SIP URI to which to route the call for operator (help desk) assistance.
Request operator transfer DTMF	The DTMF command for requesting an operator. **Note:** If this digit string matches a VMR number, that VMR becomes unreachable.
Timeout to cancel operator request (sec)	The length of time after requesting an operator that a caller is given to cancel that request (1-10 seconds). **Note:** An operator request can be canceled by entering any DTMF key.

See also:

Shared Number Dialing on page 220

Edit Direct Dial Virtual Entry Queue Dialog Box

Lets you edit the direct dial virtual entry queue (VEQ). The table below describes the fields in the dialog box.

Field	Description
Description	A meaningful description for this VEQ and its IVR experience, such as *Direct Dial - English*.
Response entry attempts	The number of times a caller can enter an invalid VMR number before the system rejects the call.
RMX entry queue	The RealPresence Collaboration Server or RMX entry queue to use for this VEQ. The list includes all entry queues available on the Polycom MCUs connected to the system, with the number of MCUs that have each entry queue shown in parentheses.

See also:

Shared Number Dialing on page 220

Superclustering

This chapter describes the Polycom® RealPresence® Distributed Media Application™ (DMA®) 7000 system's superclustering capability. It includes the following topics:

About Superclustering

The two-server configuration of the Polycom RealPresence DMA system is configured as a co-located two-server *cluster*, which enhances the reliability of the system by providing a measure of redundancy. To provide even greater reliability, geographic redundancy, and better network traffic management, multiple Polycom RealPresence DMA systems (either single-server or two-server systems) in distributed locations can be combined into a *supercluster*.

A supercluster is a set of up to five Polycom RealPresence DMA system clusters that are geographically dispersed, but still centrally managed. The clusters in a supercluster are all peers. There is no "master" or "primary" cluster. All have local copies of the same data store, which are kept consistent via replication.

This common data store enables all the Call Servers to share the same site topology, dial plan, bandwidth management, endpoint registrations, usage reporting, and status monitoring. Sharing and replicating this data also allows single-point management (configuration/re-configuration) of the shared data from any cluster of the supercluster. Up to three clusters can function as Conference Managers, hosting conference rooms and managing pools of MCUs.

Responsibility for most functionality, including Active Directory and Exchange integration, device registration, call handling, and conference room (VMR) hosting, is apportioned among the clusters using site topology territories. You can assign a set of responsibilities to each territory, and you can assign a primary cluster and a backup cluster for each territory. When the primary cluster is online, it controls the territory and carries out all of the responsibilities belonging to the territory. When the primary cluster is offline, the backup cluster assumes control of the territory and carries out all of the territory's responsibilities.

A standalone (not superclustered) Polycom RealPresence DMA system has a single default territory for which it's the primary cluster (and of course there is no backup). When you join other clusters to it to create a supercluster, it still has that same single default territory, it's still the primary cluster for the default territory, and there is still no backup cluster. Essentially, one cluster is responsible for everything, and the others do nothing. So immediately after forming a new supercluster, you should do the following:

1. If you haven't already done so, create your site topology data or integrate with a Polycom RealPresence Resource Manager or CMA system to obtain it. See Site Topology on page 278.
2. Determine how you want to organize your sites into territories in order to best distribute responsibilities and workload among the clusters of your supercluster. A number of strategies are possible. For instance, with a five-cluster supercluster, you could adopt one of the following schemes:

- Create four territories, assign a primary cluster for each, and assign the fifth cluster as backup for all four.
- Create five territories, assign a primary cluster for each, and make each cluster the backup for one of the other territories.
- Use some hybrid of the above that best suits your enterprise network's distribution of sites, users, and traffic.

Keep in mind that only three territories can host conference rooms.

Note: Resource Management Integration

If you've integrated with a Polycom RealPresence Resource Manager or CMA system, site topology data comes from that system and can't be edited in the RealPresence DMA system. You must create the territories needed in the RealPresence Resource Manager or CMA system.

3 Create the territories needed, assign functionality responsibilities to the territories, and assign primary and backup clusters to the territories.

Note: Supercluster Software Versions Must Match

All the clusters in a supercluster must be running compatible software versions. Patch releases of the same major version will generally be compatible, but major version upgrades will not be compatible. Major version software upgrades of a supercluster take careful planning. See Incompatible Software Version Supercluster Upgrades on page 386.

If you're planning to form a supercluster, we encourage you to upgrade to the latest version before doing so.

Note: Create Required DNS Records

The host names (virtual and physical) of every cluster in the supercluster must be resolvable by all the other clusters. For a superclustered system, A/AAAA records on your DNS server(s) for each physical host name, physical IP address, and virtual host name are mandatory. See Add Required DNS Records for the Polycom RealPresence DMA System on page 30.

Superclustering is not supported in **Maximum security** mode. See The Consequences of Enabling Maximum Security Mode on page 55.

See also:

Supercluster Procedures on page 230

RealPresence DMAs

The **RealPresence DMAs** page lets you create, view, and manage a *supercluster* of Polycom RealPresence DMA systems (see About Superclustering on page 226).

If the system you're logged into is not (and has not been) part of a supercluster, the list contains only that system. The **Join Supercluster** command lets you:

- Create a new supercluster by pointing it to another free-standing (not superclustered) Polycom RealPresence DMA system. Both systems become clusters in the new supercluster. The system you're logged into has its local data store largely replaced by a copy of the data store from the system to which you pointed it. The data from that other system becomes the shared supercluster data store.

- Add the system to an existing supercluster by pointing it to one of the existing clusters in the supercluster. The system you're logged into becomes one of the clusters in that supercluster, and its local data store is largely replaced by a copy of the shared supercluster data store.

Caution: Adding a Cluster to a Supercluster Overwrites Data

When you add the cluster you're logged into to an existing supercluster, virtually all of that cluster's data and configuration are replaced by the shared data and configuration of the supercluster. This includes, among other things, users, groups, conference rooms, site topology, Conference Manager configuration, Call Server configuration, and integrations.

When you create a new supercluster, the data and configuration of the cluster you're logged into are replaced by the data and configuration of the cluster to which you're pointing it.

Be sure you create a new supercluster by joining the cluster you're logged into to the cluster that has the data and configuration you want to preserve. For instance, if one of the clusters is integrated with your Polycom RealPresence Resource Manager or CMA system, join the other cluster to it, not the other way around.

Note: Superclusters and Resource Management Integration

You can't add a Polycom RealPresence Resource Manager or CMA system to a supercluster or create a supercluster with a Polycom RealPresence Resource Manager or CMA system. But you can integrate a Polycom RealPresence DMA cluster with a Polycom RealPresence Resource Manager or CMA system in order to get site topology and user-to-device association data from the latter (see Resource Management System Integration on page 178). You can do this either before or after creating a Polycom RealPresence DMA supercluster. The site topology and user-to-device association data is replicated throughout the supercluster.

If a supercluster exists, the **Remove from Supercluster** command lets you remove the cluster selected in the list from the supercluster, re-initializing it as a new stand-alone cluster. It retains the data and configuration from the supercluster (including site topology), but that data is no longer synchronized to the common data store. If the cluster you're removing is responsible for any territories (as primary or backup), you must first reassign those territories. The cluster being removed may be either the one you're logged into or another cluster. The system prompts you to confirm.

The **Busy Out** command gracefully winds down the use of the selected cluster:

- Existing calls and conferences on the selected cluster continue, but no new conferences are allowed to start. New calls are allowed to start only if they are associated with existing conferences. Registrations are rejected, except for endpoints currently involved in calls. The cluster ceases to manage bandwidth.
- Territories for which the selected cluster has primary responsibility and a different cluster has backup responsibility are transferred to the backup cluster.
- Registrations are seamlessly transferred to the backup cluster (for endpoints that support this). Bandwidth usage data for ongoing calls is seamlessly transferred to the backup cluster.

The **Stop Using** command takes the selected cluster immediately out of service:

- Existing calls and conferences on the selected cluster are disconnected. No new calls or conferences are allowed to start. All registrations are rejected. The cluster ceases to manage bandwidth.
- Territories for which the selected cluster has primary responsibility and a different cluster has backup responsibility are transferred to the backup cluster.
- Registrations are seamlessly transferred to the backup cluster (for endpoints that support this). Bandwidth usage data for ongoing calls is seamlessly transferred to the backup cluster.

The **Start Using** command puts the selected cluster back into service:

- New calls and conferences are allowed to start. The cluster begins bandwidth management.
- The cluster assumes control of any territories for which it has primary responsibility, or for which it has backup responsibility and the primary cluster is offline.
- For territories for which the restarted cluster is the primary, existing calls and conferences on the backup cluster continue, but no new conferences are allowed to start. New calls are allowed to start only if they are associated with existing conferences. The backup cluster ceases to manage bandwidth.
- Registrations are seamlessly transferred to the restarted primary cluster, where supported by the endpoint. Bandwidth usage data for ongoing calls is seamlessly transferred to the restarted primary cluster.

Note: Shutting Down a Supercluster

There is no mechanism for shutting down an entire supercluster. If you want to shut down all clusters in a supercluster, you must do so one cluster at a time. See Shutting Down and Restarting on page 393 and pay attention to the caution there.

Warning: Restart or Reset Supercluster Services in an Emergency Only

Restart Supercluster Services and **Reset Supercluster Services** are ***emergency actions*** that should only be taken when instructed to do so by a Polycom Global Services representative. They're intended only for resolving data store replication problems that can't be resolved by other means.

Restart Supercluster Services restarts supercluster services on the selected cluster. All calls are terminated and the cluster becomes unresponsive for a short period of time.

Reset Supercluster Services hard-resets supercluster services on the selected cluster and resets the cluster to its initial defaults. ***This results in the loss of data.*** All calls are terminated, and the cluster is forced to leave the supercluster and rebooted.

The following table describes the fields on the page.

Column	Description
Host Name	Virtual host name of the cluster's signaling interface.
IP Address	Virtual IP address of the clusters signaling interface.
Model	Type of system. Currently, only RealPresence DMA 7000 systems may join a supercluster.
Version	Software version of the system.
RAS Port	The UDP port the cluster uses for H.323 RAS (Registration, Admission and Status) signaling.
SIP TCP Port	The TCP port number the cluster uses for SIP.
SIP UDP Port	The UDP port number the cluster uses for SIP.
SIP TLS Port	The TLS port number the cluster uses for SIP.
Status	Indicates whether the cluster is superclustered and whether it's in service.
Time	The time and date that the status was checked.

See also:

About Superclustering on page 226

Supercluster Procedures on page 230

Join Supercluster Dialog Box

In the **Supercluster** page's action list, the **Join Supercluster** command lets you add a Polycom RealPresence DMA system to an existing supercluster or create a new one. It opens the **Join Supercluster** dialog box, where you can specify any cluster in the supercluster to join. If the cluster you specify isn't already part of an existing supercluster, joining to it creates a new supercluster that gets its shared data store from the cluster you specify.

Note: Supercluster Software Versions Must Match

All the clusters in a supercluster must be running compatible software versions. Patch releases of the same major version will generally be compatible, but major version upgrades will not be compatible. If the software version of the system you're adding isn't compatible with the supercluster or cluster to which you're joining it, a message tells you so and the join operation is terminated.

The host names (virtual and physical) of every cluster in the supercluster must be resolvable by all the other clusters. For a superclustered system, A/AAAA records on your DNS server(s) for each physical host name, physical IP address, and virtual host name are mandatory. See Add Required DNS Records for the Polycom RealPresence DMA System on page 30.

The following table describes the fields in the **Join Supercluster** dialog box.

Column	Description
Host name or IP address	Any existing cluster in the supercluster to which the Polycom RealPresence DMA system should be joined, or the system with which to form a new supercluster. We strongly recommend specifying the FQDN of the virtual management interface for the cluster to be joined.
User name	An administrator login name for the specified cluster.
Password	The password for the administrator login.

See also:

About Superclustering on page 226

RealPresence DMAs on page 227

Supercluster Procedures

Note: Verify DNS Records

Prior to creating a supercluster, we recommend verifying that DNS can resolve all FQDNs of all clusters to become part of the supercluster. To do so, go to **Maintenance > Troubleshooting Utilities > Ping** and ping the FQDNs (virtual and physical) of the other cluster(s). Do this on each cluster.

To create or join a supercluster

1 Go to **Network > RealPresence DMAs**.

2 In the **Actions** list, click **Join Supercluster**.

Note: Allow Supercluster Join Operations to Complete

You can only add one cluster to a supercluster at a time. Wait until the current join operation is completely finished before attempting to add another cluster to the supercluster. The join operation may take several minutes, and the time required increases as the number of clusters in the supercluster increases.

3 In the **Join Supercluster** dialog box, do one of the following:

- To create a new supercluster, enter the FQDN or host name of the virtual management interface for the other Polycom RealPresence DMA cluster with which to form the supercluster. Be sure the other cluster is the one whose data store you want shared with the supercluster.
- To add this system to an existing supercluster, enter the FQDN or host name of the virtual management interface of one of the clusters in the supercluster.

Note: Create Required DNS Records

You may specify an IP address instead, but the host names (virtual and physical) of every cluster in the supercluster must be resolvable by all the other clusters. For a superclustered system, A/AAAA records on your DNS server(s) for each physical host name, physical IP address, and virtual host name are mandatory. See Add Required DNS Records for the Polycom RealPresence DMA System on page 30.

4 Enter the user name and password with which to log into the Polycom RealPresence DMA cluster you specified.

5 Click **OK**.

A prompt warns you that the system will restart and local data will be overwritten, and asks you to confirm.

6 Click **Yes**.

The cluster you're logged into connects to the cluster you specified and establishes or joins the supercluster. It obtains supercluster-wide configuration and data (this may take a few minutes). A dialog box informs you when the process is complete and the cluster is ready to restart. Shortly after that, the cluster logs you out and restarts.

7 Click **OK** to log out immediately, or simply wait.

Note: Restart Your Browser

You may need to restart your browser or flush your browser cache in order to log back into the system.

8 Log back in and verify that the **Supercluster Status** pane of the **Dashboard** shows the correct number of servers and clusters, and there are no warnings.

9 Go to **Network > RealPresence DMAs**, verify that the status of each RealPresence DMA cluster is *Superclustered*, and reassign territory responsibilities as needed.

To remove a cluster from the supercluster

Note: Remove a Cluster Only While its Servers are Operational

If possible, remove a cluster only while its server or servers are on line. If you must remove a cluster while one or both servers are off line, be aware that an offline server may be in an inconsistent state when it's brought back on line. If this occurs, the system attempts to auto-correct the situation. But if the auto-correction steps fail, the only supported procedure for fixing a server in this state is to re-install it from media.

1. Make sure that there are no calls on the cluster, and that all of its MCUs are out of service. See MCU Procedures on page 139.
2. Reassign all of the cluster's territory responsibilities to a different cluster.
3. Go to **Network > RealPresence DMAs**. In the list, select the cluster you want to remove.
4. In the **Actions** list, select **Remove from Supercluster**.
5. When asked to confirm that you want to remove the cluster, click **Yes**.

   The selected cluster is removed from the supercluster. A dialog box informs you when the process is complete. If the cluster you removed is the one you're logged into, it logs you out and restarts.
6. Click **OK** to log out immediately, or simply wait.

Note: Restart Your Browser

You may need to restart your browser or flush your browser cache in order to log back into the system.

7. Log into the system you removed and verify on the **Supercluster Status** pane of the **Dashboard** that the system is no longer superclustered.

See also:

About Superclustering on page 226

RealPresence DMAs on page 227

Join Supercluster Dialog Box on page 230

Call Server Configuration

This chapter describes the Polycom® RealPresence® Distributed Media Application™ (DMA®) 7000 system's configuration tools and tasks related to its Call Server:

- About the Call Server Capabilities
- Call Server Settings
- Domains
- Dial Rules
- Hunt Groups
- Device Authentication
- Registration Policy
- Prefix Service
- Embedded DNS
- History Retention Settings

These are settings and features that are shared across superclustered systems. See Introduction to the Polycom RealPresence DMA System on page 15.

About the Call Server Capabilities

The Polycom RealPresence DMA system's Call Server capabilities provide gatekeeper functionality (if H.323 signaling is enabled), SIP proxy server and registrar functionality (if SIP signaling is enabled), and bandwidth management.

The system can also function as an H.323 <-> SIP gateway.

Note: Call Server Characteristics

In H.323, DTMF tones are usually sent over the H.323 signaling path. In SIP, DTMF tones are usually sent over the media path as a special RTP payload packet (see RFC 4733). Because of this difference and because the RealPresence DMA system isn't in the media path, its gateway function doesn't support DTMF transmission.

The gateway function also doesn't support content sharing or AES encryption.

The RealPresence DMA system's gateway function is used only for calls to registered endpoints, SIP peers, and H.323 gatekeepers. It's not used for calls to virtual meeting rooms (VMRs), virtual entry queues (VEQs), external addresses, or IP addresses.

In addition, the system can be integrated with a Juniper Networks Service Resource Controller (SRC) to provide bandwidth assurance services.

Call server configuration begins with enabling the desired signaling on each cluster's Signaling Settings page. Other Call Server settings are shared across all systems in a supercluster and set on the **Admin > Call Server** pages.

Note: IPV4 Addresses Preferred for Signaling Communication

In an IPv4 + IPv6 environment, the Polycom RealPresence DMA system gatekeeper prefers the IPv4 address for devices that register with both. For example, if endpoint A is a dual-stack device (that is, it supports both IPv4 and IPv6) and registers over IPv6 to a Polycom RealPresence DMA system that's also dual-stack, the RRQ (Registration Request) message informs the RealPresence DMA gatekeeper of the endpoint's IPv6 and IPv4 addresses (as well as its E.164 alias, etc.).

If endpoint A dials the E.164 address of another dual-stack endpoint (endpoint B), the RealPresence DMA gatekeeper gives preference to the IPv4 address by sending endpoint B's IPv4 address in the ACF (Admission Confirm) message to endpoint A. Even though the initial ARQ and corresponding ACF were over IPv6, the expected behavior is that endpoint A will continue the H.323 signaling session to endpoint B over IPv4 since the RealPresence DMA gatekeeper informed endpoint A of endpoint B's IPv4 signaling IP.

See also:

Call Server Configuration on page 233

Call Server Settings on page 234

Call Server Settings

On the **Call Server Settings** page, you can specify certain gatekeeper and SIP proxy settings used by the Polycom RealPresence DMA system Call Server. These settings are shared across the supercluster and apply to all the clusters.

The following table describes the fields on the page.

Field	Description
General Settings	
Allow calls to/from rogue endpoints	If this option is selected, the Call Server permits rogue endpoints to place and receive calls. Rogue endpoints are endpoints that are in sites managed by the system, but are not registered and active. Turning this option off blocks calls from and to rogue endpoints. This option has no effect on other unregistered network devices (such as MCUs, GKs, and SBCs) or on endpoints that are not in sites managed by the system.
Allow calls to inactive endpoints	If this option is selected, the Call Server considers inactive as well as active endpoints when attempting to resolve an address using the *Dial registered endpoints by alias* dial rule (see The Default Dial Plan and Suggestions for Modifications on page 241). Turning this option off can prevent the aliases of registrations that are no longer active from masking the aliases of endpoints registered to other call servers. This is useful in situations where an endpoint might have an active registration with one Call Server and an inactive registration with another (such as a mobile device that moves from a Call Server handling registrations through an SBC to a different Call Server in the network).

Field	Description
Available bandwidth limit (percent)	Sets the maximum percentage of the available bandwidth that can be allocated to a single call. If the requested bandwidth exceeds this value, the Call Server “downspeeds” (reduces the bit rate of) the call, but only to the user’s downspeed minimum. If there is insufficient bandwidth to comply with both this setting and the downspeed minimum, the call is rejected.
Territory failover delay (seconds)	The number of seconds a territory’s backup cluster waits after losing contact with the primary before it takes over the territory. Must be in the range 6-300.
Timeout for call forwarding when no answer (seconds)	The number of seconds to wait for the called endpoint to answer (fully connect) before forwarding the call, if call forwarding on no answer is enabled for the called endpoint. Must be in the range 5-32.
Registration refresh interval (seconds)	For H.323 endpoints, specifies how often registered endpoints send “keep alive” messages to the Call Server. Endpoints that fail to send “keep alive” messages on time are flagged as inactive. For SIP endpoints, specifies the refresh interval used if the endpoint didn’t specify an interval or specified one greater than this value. Must be greater than or equal to the minimum SIP registration interval and in the range 150-9999.
Lync conference ID query timeout (seconds)	When integrated with a Microsoft® Lync 2013 environment, limits the duration of queries to the Lync 2013 server for a dialed conference ID. Must be in the range 1-20.
For SIP calls gatewayed to an external gatekeeper, use the H.323 email ID as the destination	If this option is selected, when the system uses dial rules to attempt to resolve a SIP call to an external gatekeeper, the Call Server sets the destination in the LRQ message to the H.323 email ID (such as 1234@example.com) rather than utilizing the E.164 number alone (such as 1234). Some external gatekeepers, such as the RealPresence Access Director system, may need the additional domain information in the LRQ message to correctly resolve the LRQ request. If this option is off, SIP calls gatewayed by the RealPresence DMA system to a RealPresence Access Director configured as an external H.323 gatekeeper fail because the gatekeeper doesn't have enough information to route the call. **Note:** This option affects communications with all external H.323 gatekeepers to which the RealPresence DMA system gateways SIP calls.
SIP Settings	
Minimum SIP registration interval (seconds)	The minimum time between “keep alive” messages to SIP endpoints. Must be less than or equal to the registration refresh interval and in the range 150-3600.
SIP peer timeout (seconds)	The timeout value for calls to peer proxy servers, after which the dial attempt is canceled. Must be in the range 3-300.

Field	Description
SIP max breadth	The maximum number of concurrent parallel branches due to forking of a request.
H.323 Settings	
Gatekeeper call mode	**Direct call mode** — The Call Server processes only H.225.0 RAS call control messages. The endpoints exchange other call signaling and media control messages directly, bypassing the gatekeeper. **Routed call mode** — The Call Server proxies all H.323 signaling messages.
Accept H.323 neighbor requests only from specified external gatekeepers	If this option is selected, the Call Server accepts H.323 location requests (LRQs) only from gatekeepers configured on the **External Gatekeeper** page (see External Gatekeeper on page 101).
Resolve H.323 Email-ID dial strings to other registered H.323 aliases	If this option is selected, the Call Server resolves email ID dial strings to another local alias by using the user part of the email address. For example, the dial string `1234@mycompany.com` would resolve to the endpoint registered as `1234`.
Automatically assign enterprise users' email addresses as H.323 email IDs	If this option is selected and the system is integrated with Active Directory, an endpoint associated with an enterprise user is assigned the user's email address (if that address hasn't already been explicitly assigned to another endpoint).
Location request hop count	The initial hop count the Call Server uses when it sends LRQs to neighbored gatekeepers.
Location request timeout (seconds)	The number of seconds to wait for a response from a neighbored gatekeeper.
IRQ sending interval (seconds)	The interval at which the system sends IRQ messages to H.323 endpoints in a call, requesting QoS (quality of service) reports. Must be in the range 10-600.
Terminate calls based on failed responses to IRQs	If this option is selected, the Call Server terminates a call if it sends an IRQ (Information Request) to an endpoint that signaled support for IRQs, and the endpoint either fails to respond or responds with an IRR (Information Request Response) containing an invalidCall field. This is the correct behavior according to the H.323 ITU Specification, and it prevents a call license from being used unnecessarily for a call that's no longer active. Some endpoints (VVX prior to v.4.0.1; Sony PCS1, XG80, and G70; and possibly others) signal support for IRQs but don't properly handle IRQ/IRR messaging, causing active calls to be disconnected if this option is selected. To avoid this problem with such endpoints, leave this option off. **Note:** This setting has no effect on calls from endpoints that don't signal support for IRQs.

Field	Description
Dynamically blacklist signaling from hyperactive endpoints	If this option is selected, the Call Server adds H.323 endpoints to its blacklist (ignoring their signaling messages) when they send duplicate RRQ or GRQ messages in excess of the criteria you specify below. When an endpoint is blacklisted, the Call Server: • Stops interpreting, responding to, auditing, or logging messages of that type from the endpoint. • Creates Alert 5002 and corresponding SNMP trap. • Logs the blacklisting.
Gatekeeper Blacklist Settings	
Message Type	You can specify the blacklist settings separately for RRQ (Registration Request) and GRQ (Gatekeeper Request) messages.
Threshold	The number of duplicate messages within the specified interval that causes an endpoint to be blacklisted.
Interval (msec)	The interval in milliseconds to which the threshold applies.
Quarantine	If this option is selected, endpoints that are blacklisted are also quarantined. They remain in Quarantined or Quarantined (Inactive) status (unable to make or receive calls) until manually removed from quarantine. See Endpoints on page 91.
Apply to VBP	If this option is selected, video border proxies (VBPs) can be blacklisted. If a VBP is blacklisted, none of the endpoints behind it can register.
Remove non-hyperactive endpoints from blacklist after specified interval (minutes)	The interval for which an endpoint must be well-behaved (that is, not exceed the blacklisting threshold for the specified interval) in order to be removed from the blacklist and once again allowed to register. When an endpoint is removed from the blacklist, the Call Server: • Starts interpreting, responding to, auditing, and logging messages of that type from the endpoint. • Clears the alert and SNMP trap. • Logs the removal from the blacklist. **Note:** If the endpoint was quarantined as well as blacklisted, it remains quarantined.

See also:

Call Server Configuration on page 233

About the Call Server Capabilities on page 233

Domains

On the **Domains** page, you can add administrative domains to or remove them from the list of domains from which registrations are accepted.

If the list is empty, all domains are considered local, and the system accepts endpoint registrations from any domain. Otherwise, it accepts registrations only from the listed domains. This is a supercluster-wide configuration.

Calls that have a non-local domain in the dialed string do not resolve to any locally registered endpoints, and can only resolve to a VEQ or VMR if the **Conference rooms belong to every domain** check box is checked.

Note: *Resolve to External Address* Dial Rule and Local Domains

The *Resolve to external address* dial rule action (see Add Dial Rule Dialog Box on page 244) doesn't match against domains that are considered local. If the list of domains is empty and all domains are considered local, this dial rule action won't match any dial string and can't be used.

In some circumstances (depending on network topology and configuration), dialing loops can develop if you don't restrict the RealPresence DMA system to specific domains.

The following table describes the fields on the page.

Field	Description
Add new local domain	Enter a domain and click **Add** to add it to the **Local domains** list. IP addresses (including IP addresses with the wildcard character) and domain names are accepted. Domain names must be valid and full domains, but you can replace a single host label within a domain with the wildcard character to match multiple subdomains. For instance:, *.mycompany.com matches: eng.mycompany.com fin.mycompany.com And eng.*.mycompany.com matches: eng.sanjose.mycompany.com eng.austin.mycompany.com Subdomains are not local if the domain is listed without a wildcard character. For example, if the domain mycompany.com is entered without any other mycompany domains, this would NOT match eng.mycompany.com.
Local domains	The list of domains from which the system accepts registrations. Select a domain and click **Remove** to remove it from the list. Click **Restore Defaults** to remove all domains so that the system accepts registrations from any domain.
Locally registered SIP endpoints belong to every local domain	Specifies that call requests for locally registered SIP endpoints don't have to match the domain. For example, if there is an endpoint registered as 'sip:johnsmith@1.1.1.1' and this option is enabled, a call to 'sip:johnsmith@mycompany.com' may be connected to that endpoint. If this option is not selected, call requests must exactly match the URI of the registered endpoint.

Field	Description
Email IDs of registered H.323 endpoints belong to every local domain	Specifies that call requests for locally registered H.323 endpoints' email IDs don't have to match the domain. For example, if there is an endpoint registered as 'h323:johnsmith@1.1.1.1' and this option is enabled, a call to 'h323:johnsmith@mycompany.com' may be connected to that endpoint. If this option is not selected, call requests must exactly match the URI of the registered endpoint.
Conference rooms and virtual entry queues belong to every domain	Specifies that if the dial string specifies a conference room (VMR) or virtual entry queue (VEQ) on the Polycom RealPresence DMA system and includes a domain, a dial rule implementing the **Resolve to conference room ID** or **Resolve to virtual entry queue** actions (such as dial rule #2 or #3 of the default dial plan) ignores the domain and routes the call to that conference room or VEQ. If this option is not selected, a dial string that includes a domain doesn't match a **Resolve to conference room ID** or **Resolve to virtual entry queue** dial rule.

See also:

Call Server Configuration on page 233

About the Call Server Capabilities on page 233

Dial Rules

Dial rules specify how the Polycom RealPresence DMA system Call Server uses the dial string to determine where to route the call. This dial string may include an IP address, a string of numbers that begin with a prefix associated with a service, a string that begins with a country code and city code, or a string that matches a particular alias for a device.

Dial strings may match multiple dial rules, but the rules have a priority order. When the Polycom RealPresence DMA system Call Server receives a call request and associated dial string, it applies the first matched (highest priority) dial rule.

The Call Server comes with a default dial plan installed that provides the most commonly needed address resolution processing. On the **Dial Rules** page, you can add, edit, remove, and change the order of the dial rules that make up the system's dial plan. This is a supercluster-wide configuration.

The Call Server can optionally have a separate dial plan used only for untrusted ("unauthorized" or "guest") SIP calls. These are calls from devices not registered with the RealPresence DMA system and outside the corporate firewall (but not part of a federated enterprise). These calls typically come to the RealPresence DMA system via session border controllers (SBCs) such as a Polycom RealPresence Access Director or Acme Packet Session Border Controller device.

You can configure the system to recognize and accept such calls on the **Signaling Settings** page (see H.323 and SIP Signaling on page 72). On the **Dial Rules** page, you can create a separate set of "guest" dial rules used only for these untrusted calls.

A dial rule consists of an optional preliminary script to modify dial strings and the action to be performed, which you select from a well-defined list of actions. These actions encapsulate potentially complex dial resolution logic, which shields you from having to deal with these complexities.

For instance, the **Resolve to registered endpoint** action applies all the associated system configurations and performs various searches on the internal endpoint registration records to determine if the inbound call is attempting to reach another registered endpoint. It automatically adjusts for signaling protocol (SIP/H.323), case, and standard dial string deviations to locate a registered endpoint. You don't have to account for these variables in your dial plan because the logic behind the action does so for you.

You can test the current dial rules using the **Test Dial Rules** command. You can specify various caller parameters and a dial string, and see how the current dial rules handle such a call. See Test Dial Rules Dialog Box on page 240.

The **Dial Rules** page contains two lists, one for authorized calls and one for unauthorized calls. The former contains the system's default dial plan. The latter is empty unless you add rules to it. Both lists contain the same fields. The following table describes the fields in the two lists.

Column	Description
Order	The priority order of the rules. Use the **Move Up** and **Move Down** commands to change the priority of a rule.
Description	Brief description of the rule.
Action	Action performed by the rule.
Preliminary Enabled	Indicates whether a script filters or transforms the dial string before the action is performed.
Enabled	Indicates whether the rule is turned on.

See also:

Call Server Configuration on page 233

Test Dial Rules Dialog Box on page 240

The Default Dial Plan and Suggestions for Modifications on page 241

Add Dial Rule Dialog Box on page 244

Edit Dial Rule Dialog Box on page 248

Test Dial Rules Dialog Box

The **Test Dial Rules** dialog box provides a testing mechanism for the current dial plan. You can specify various caller parameters and a dial string, and see how the each dial rule handles such a call and what its final disposition is.

The following table describes the fields in the **Test Dial Rules** dialog box.

Field	Description
Caller site	Select a site in order to set the four caller site variables: • CALLER_SITE_NAME • CALLER_SITE_DIGITS • CALLER_SITE_COUNTRY_CODE • CALLER_SITE_AREA_CODE These variables can't be set directly and are display only.
CALLER_H323ID	Test caller's H323-ID or blank.
CALLER_E164	Test caller's H.323 E.164 alias or blank.
CALLER_TEL_URI	Test caller's SIP tel URI or blank.
CALLER_SIP_URI	Test caller's SIP sip URI or blank.
Dial string	Enter a dial string to test. Then click **Test**. For SIP, the dial string should always specify the schema prefix (sip or sips). For example: `sips:rbruce@10.47.7.9`
Test route output	Displays the results of applying each rule (including its preliminary, if any) to the dial string. For instance, testing the dial string example shown above against the default dial plan might result in the following: #1:SipAlias[sips:rbruce@10.47.7.9] is not registered. H323-ID[rbruce] is not registered. #2:The room [rbruce] does not exist. #3:No entry queue is found. #4:Domain [10.47.7.9] is not within our administration. #5:The call was accepted by this dial rule.
Final result	Displays the final outcome of the dial rule processing. The final outcome for the example above would be: Transformed dial string is [sips:rbruce@10.47.7.9]. The call was accepted by dial rule #5.

See also:

Dial Rules on page 239

Add Dial Rule Dialog Box on page 244

Edit Dial Rule Dialog Box on page 248

Preliminary/Postliminary Scripting on page 251

The Default Dial Plan and Suggestions for Modifications

The Polycom RealPresence DMA system is configured by default with a generic dial plan that covers many common scenarios and may prove adequate for your needs. It's described in the table below.

Rule	Effect
1 Dial registered endpoints by alias	If the dial string is the alias or SIP URI of a registered endpoint, the call is routed to that endpoint.
2 Dial by conference room ID	Otherwise, if the dial string is the dial-in number of a conference room on the Polycom RealPresence DMA system, the call is routed to that conference room.
3 Dial by virtual entry queue ID	Otherwise, if the dial string is the dial-in number of a virtual entry queue on the Polycom RealPresence DMA system, the call is routed to that VEQ.
4 Dial by Lync conference ID	Otherwise, if the dial string is the dial-in number of a Lync conference on the Lync AVMCU, the call is routed to an available Polycom MCU that supports Lync 2013 and automatically connected to the corresponding Lync conference on the AVMCU. (If no Polycom MCUs that support Lync 2013 are available, the conference fails to start).
5 Dial services by prefix	Otherwise, if the dial string begins with the configured prefix of a service (such as an MCU, ISDN gateway, SBC, neighbor gatekeeper, SIP peer proxy, or simplified ISDN dialing service) the call is routed to that service. **Note:** For a SIP peer, the dial string must either include the protocol or consist of only the prefix and user name (no @domain). For instance, if the SIP peer's prefix is 123, the dial string for a call to alice@polycom.com must be one of the following: sip:123alice@polycom.com 123alice
6 Dial external networks by H.323 URL, email ID, or SIP URI	Otherwise, if the address is an external address, the call is routed to that external address (H.323 calls use the designated SBC for the originating site to reach addresses outside the enterprise network; see Edit Site Dialog Box on page 285). Examples of external addresses: H323:johnsmith@someothercompany.com sip:johnsmith@someothercompany.com
7 Dial endpoints by IP address	Otherwise, if the address is an IP address, the call is routed to that IP address (H.323 calls use the designated SBC for the originating site to reach addresses outside the enterprise network). Examples of IP addresses: 1.2.3.4 1.2.3.4##abc sip:abc@1.2.3.4 sip:1.2.3.4@mycompany.com

If you have special configuration needs and want to modify the dial plan, be aware that some of the default dial rules are necessary for "normal" operation. Removing or modifying them takes the system out of compliance with ITU and IEEE standards.

Here are some suggestions and guidelines for modifying the dial plan:

- To add an MCU, ISDN gateway, SBC, neighbor gatekeeper, SIP peer, or simplified dialing service that can be dialed by prefix, configure the prefix range of the new service on the appropriate page. No dial plan change is necessary, since Rule Dial services by prefix of the default dial plan takes care of dialing by prefix.
- You can remove or disable a default dial rule if you don't want the associated functionality.

  But note that Rule Dial endpoints by IP address (*Dial endpoints by IP address*) is used in several scenarios where calls are received from neighbor gatekeepers or SBCs. Removing it breaks these scenarios.
- If certain dial strings are matching on the wrong dial rule, you may need to re-order the rules.
- In some circumstances (depending on the dial plan and the network topology and configuration), dial rules using the **Resolve to external address** action (like Rule 5 of the default dial plan) or the **Resolve to IP address** action (like Rule 6) can enable dialing loops to develop, especially if servers reference each other either directly or via DNS.

  Common ways to avoid dialing loops include:

  - Use domain restrictions to ensure that the RealPresence DMA system and its peers are each responsible for specific domains (see Add External SIP Peer Dialog Box on page 105 and Domains on page 237).
  - Use a preliminary script like the sample script “SUBSTITUTE DOMAIN (SIP)” (see Sample Preliminary and Postliminary Scripts on page 255) to change the domain of a SIP URI dial string to something that won’t create a dialing loop.
  - Use a postliminary script to similarly change the domain before sending to a peer.
  - Use configuration options on the peers to prevent loops.
- You can add a filtering preliminary script to any dial rule to restrict the behavior of that rule.

  For example, if you know that all the aliases of a specific neighbor gatekeeper are exactly ten digits long, you may want to route calls to that gatekeeper only if the dial string begins with a certain prefix followed by exactly ten digits.

  To accomplish this, add a preliminary script to the service prefix dial rule that rejects all dial strings that begin with the prefix, but aren’t followed by exactly ten digits.
- To exclude certain dial strings, combine a filtering preliminary script with the **Block** action.
- You can use a preliminary script to modify the dial strings accepted by any of the rules.

  For example, to be able to call an enterprise partner by dialing the prefix 7 followed by an alias in the partner’s namespace, configure a **Resolve to external** at transforms the string `7xxxx` to `H323:xxxx@enterprisepartner.com`.

  This type of dial string modification is also useful if you are using Lync conference dial strings with prefixes. To route a dial string with a prefix to a Lync conference ID, configure a **Resolve to Lync conference ID** action with a preliminary script that removes the prefix from the dial string (1234567 would become 4567, for example).
- If your enterprise includes another gatekeeper and you want to route calls to that gatekeeper without a prefix, add a dial rule using the **Resolve to external gatekeeper** action.

- If your enterprise includes a SIP peer and you want to route calls to that peer without a prefix, add a dial rule using the **Resolve to external SIP peer** action.

  If you have multiple SIP peers, a call matching the rule is routed to the first one to answer. You may want to specify the domain(s) for which each is responsible (see Add External SIP Peer Dialog Box on page 105).

  When routing to a SIP peer, the Polycom RealPresence DMA system gives up its ability to route the call to other locations if the peer rejects the call. Consequently, a dial rule using the **Resolve to external SIP peer** action should generally be the last rule in the dial plan.

Note: SIP<->H.323 Gateway Considerations

In a mixed H.323 and SIP environment, the Polycom RealPresence DMA system acts as a seamless gateway. If an H.323 device sends it a Location Request (LRQ) and the dial plan contains a dial rule using the **Resolve to external SIP peer** action, the RealPresence DMA system will respond with a Location Confirm (LCF) because it can resolve the address by routing the H.323 call through its gateway to the SIP peer(s).

You can prevent H.323 calls from being routed to SIP peers by restricting which calls are routed to them in one or more of the following ways:

- Assign each SIP peer an authorized domain or domains (this is a good idea in any case in order to avoid dialing loops). See Edit External SIP Peer Dialog Box on page 110.
- Assign each SIP peer a prefix or prefix range. See Edit External SIP Peer Dialog Box on page 110.
- Add a preliminary script to the dial rule using the **Resolve to external SIP peer** action that ensures that the rule will only match a SIP address. See Preliminary/Postliminary Scripting on page 251.

Make the dial rule using the **Resolve to external SIP peer** action the last rule and ensure that all H.323 calls will match against one of the preceding dial rules.

See also:

Dial Rules on page 239

Edit Dial Rule Dialog Box on page 248

Preliminary/Postliminary Scripting on page 251

Add Dial Rule Dialog Box

The following table describes the fields in the **Add Dial Rule** dialog box.

Field	Description
Dial Rule	
Description	The text description displayed on the **Dial Rules** page.
Action	The action to be performed. When you select some actions, additional settings become available. See the table of dial rule actions below for more information about the actions and the additional settings associated with them.
Enabled	Clearing this check box lets you turn off a rule without deleting it.

Field	Description
Preliminary	A preliminary is an executable script, written in the Javascript language, that defines processing actions (filtering or transformation) that are part of a dial rule and may be applied to a dial string before the dial rule's action is performed. Sample Preliminary and Postliminary Scripts on page 255 provides some examples you can experiment with and modify for your purposes.
Enabled	Lets you turn a preliminary on or off without deleting it.
Script	Type (or paste) the preliminary script you want to apply. Then click **Debug this script** to open the Script Debugging Dialog Box for Preliminaries/Postliminaries and test the script with various variables.

The following table describes the **Action** options and how the system attempts to resolve the destination address (dial string) for each.

For this action:	The system attempts to resolve the address as follows:
Block	Blocks the call.
Resolve to IP address	Tries to treat the dial string as an IP address, and if it can, assumes it's the address (and port, if included) of an unregistered endpoint. If no port is specified, it uses the default port of the signaling protocol. If the dial string contains the characters "##," it tries to do this using the characters before "##." For SIP: • If the domain part is an address not controlled by the RealPresence DMA system (or supercluster), the dial string is resolved unchanged. • If the domain part is an address controlled by the RealPresence DMA system (or supercluster) and the user part is an IP address (and possibly "##"), the user part is resolved to a SIP URI. • If the characters before the first "##" resolve to an IP address, the characters after that are treated as the user part of a URI. For H.323, if the characters before the first "##" resolve to an IP address, the characters after that are converted into the destinationInfo (ACF) or destinationAddress (Setup) as follows: • If possible, encoded as a dialedDigits address. • Otherwise, if possible, encoded as a url-ID. • Otherwise, encoded as an h323-ID.
Resolve to registered endpoint	Looks for a registered endpoint (active or inactive) that has the same alias or signaling address. **Note:** This action employs the H.323<->SIP gateway function if applicable.

For this action:	The system attempts to resolve the address as follows:
Resolve to Lync conference ID	Resolves to a Lync conference that resides on a selected SIP peer. When selected, the following fields are available: • **Conference template** When checked, you can select the conference template used to start the conference. If left unchecked, or if checked and unchanged, the **Default conference template** configured in **Admin > Conference Manager > Conference Settings** will be used. Keep in mind that the conference template must specify a **Conference mode** of **AVC only**, or the conference will not start. See the note on page 169. • **Available SIP peers** / **Selected SIP peers** selection area This area lists the names of **Available SIP peers** and any **Selected SIP peers**. With the provided arrow buttons, you can move SIP peers between the Available and Selected areas. When this dial rule is executed, the system will query the selected SIP peers to find which one is hosting the Lync conference. **Note**: For an external SIP Peer to be listed in the **Available SIP peers** area, it must be listed on the **Network > External SIP Peers** page and have the following configuration: ▲ **A Type** of **Microsoft** ▲ The **Enable combined RealPresence-Lync scheduled conferences** check box selected in the **Lync Integration** tab **Note**: We recommend ordering this rule so that it appears before any rule with the action **Resolve to external SIP peer**. If the **Resolve to external SIP peer** dial rule doesn't successfully route a call, the call is aborted and no subsequent dial rules will be attempted. We also recommend that this rule not appear higher than its default order in the list of dial rules, because this can prevent valid aliases, VMRs, and VEQs from being dialed and can result in reduced system performance.
Resolve to service prefix	Looks for a service prefix that matches the beginning of the dial string (not counting the URI scheme, if present). **Note:** For a SIP peer, the dial string must either include the protocol or consist of only the prefix and user name (no @domain). For instance, if the SIP peer's prefix is 123, the dial string for a call to alice@polycom.com must be one of the following: sip:123alice@polycom.com 123alice
Resolve to external SIP peer	Checks the domain of the dial string against all of the rule's selected peers, looking for a peer proxy responsible for that domain. If the dial string matches the domain of one of the selected SIP peers, this rule will either successfully route the call, or the call will be aborted; no subsequent dial rules will be attempted. After selecting this action for a rule, move the SIP peers to which the rule applies from the **Available SIP peers** box to the **Selected SIP peers** box. **Note:** This action employs the H.323<->SIP gateway function if applicable.
Resolve to external gatekeeper	If the dial string appears to be an H.323 alias, simultaneously sends LRQ messages to all of the rule's selected gatekeepers. After selecting this action for a rule, move the gatekeepers to which the rule applies from the **Available gatekeepers** box to the **Selected gatekeepers** box. **Note:** This action employs the H.323<->SIP gateway function if applicable.

For this action:	The system attempts to resolve the address as follows:
Resolve to external address	Determines if the dial string is a well-formed instance of an external address type to which the rule applies, and if so, uses the resolution procedures specified in the applicable standard for that address type. After selecting this action for a rule, select the address type or types to which the rule applies. The address types and applicable standards used to resolve them are: • SIP URI: RFCs 3261 and 3263 • H.323 Email-ID: H.225.0 specification, Appendix IV • H.323 url-ID: H.323 specification, Annex O
Resolve to conference room ID	Looks for a conference room (virtual meeting room, or VMR) that matches the dial string.
Resolve to virtual entry queue	Looks for a shared-number entry queue that matches the dial string.

See also:

Dial Rules on page 239

The Default Dial Plan and Suggestions for Modifications on page 241

Preliminary/Postliminary Scripting on page 251

Edit Dial Rule Dialog Box

The following table describes the fields in the **Edit Dial Rule** dialog box.

Field	Description
Dial Rule	
Description	The text description displayed on the **Dial Rules** page.
Action	The action to be performed. When you select some actions, additional settings become available. See the table of dial rule actions below for more information about the actions and the additional settings associated with them.
Enabled	Clearing this check box lets you turn off a rule without deleting it.
Preliminary	A preliminary is an executable script, written in the Javascript language, that defines processing actions (filtering or transformation) that are part of a dial rule and may be applied to a dial string before the dial rule's action is performed. Sample Preliminary and Postliminary Scripts on page 255 provides some examples you can experiment with and modify for your purposes.
Enabled	Lets you turn a preliminary on or off without deleting it.
Script	Type (or paste) the preliminary script you want to apply. Then click **Debug this script** to open the Script Debugging Dialog Box for Preliminaries/Postliminaries and test the script with various variables.

The following table describes the **Action** options and how the system attempts to resolve the destination address (dial string) for each.

For this action:	The system attempts to resolve the address as follows:
Block	Blocks the call.
Resolve to IP address	Tries to treat the dial string as an IP address, and if it can, assumes it's the address (and port, if included) of an unregistered endpoint. If no port is specified, it uses the default port of the signaling protocol. If the dial string contains the characters "##," it tries to do this using the characters before "##." For SIP: • If the domain part is an address not controlled by the RealPresence DMA system (or supercluster), the dial string is resolved unchanged. • If the domain part is an address controlled by the RealPresence DMA system (or supercluster) and the user part is an IP address (and possibly "##"), the user part is resolved to a SIP URI. • If the characters before the first "##" resolve to an IP address, the characters after that are treated as the user part of a URI. For H.323, if the characters before the first "##" resolve to an IP address, the characters after that are converted into the destinationInfo (ACF) or destinationAddress (Setup) as follows: • If possible, encoded as a dialedDigits address. • Otherwise, if possible, encoded as a url-ID. • Otherwise, encoded as an h323-ID.
Resolve to registered endpoint	Looks for a registered endpoint (active or inactive) that has the same alias or signaling address. **Note:** This action employs the H.323<->SIP gateway function if applicable.

For this action:	The system attempts to resolve the address as follows:
Resolve to Lync conference ID	Resolves to a Lync conference that resides on a selected SIP peer. When selected, the following fields are available: • **Conference template** When checked, you can select the conference template used to start the conference. If left unchecked, or if checked and unchanged, the **Default conference template** configured in **Admin > Conference Manager > Conference Settings** will be used. Keep in mind that the conference template must specify a **Conference mode** of **AVC only**, or the conference will not start. See the note on page 169. • **Available SIP peers** / **Selected SIP peers** selection area This area lists the names of **Available SIP peers** and any **Selected SIP peers**. With the provided arrow buttons, you can move SIP peers between the Available and Selected areas. When this dial rule is executed, the system will query the selected SIP peers to find which one is hosting the Lync conference. **Note**: For an external SIP Peer to be listed in the **Available SIP peers** area, it must be listed on the **Network > External SIP Peers** page and have the following configuration: ▲ **A Type** of **Microsoft** ▲ The **Enable combined RealPresence-Lync scheduled conferences** check box selected in the **Lync Integration** tab **Note**: We recommend ordering this rule so that it appears before any rule with the action **Resolve to external SIP peer**. If the **Resolve to external SIP peer** dial rule doesn't successfully route a call, the call is aborted and no subsequent dial rules will be attempted. We also recommend that this rule not appear higher than its default order in the list of dial rules, because this can prevent valid aliases, VMRs, and VEQs from being dialed and can result in reduced system performance.
Resolve to service prefix	Looks for a service prefix that matches the beginning of the dial string (not counting the URI scheme, if present). **Note:** For a SIP peer, the dial string must either include the protocol or consist of only the prefix and user name (no @domain). For instance, if the SIP peer's prefix is 123, the dial string for a call to alice@polycom.com must be one of the following: sip:123alice@polycom.com 123alice
Resolve to external SIP peer	Checks the domain of the dial string against all of the rule's selected peers, looking for a peer proxy responsible for that domain. If the dial string matches the domain of one of the selected SIP peers, this rule will either successfully route the call, or the call will be aborted; no subsequent dial rules will be attempted. After selecting this action for a rule, move the SIP peers to which the rule applies from the **Available SIP peers** box to the **Selected SIP peers** box. **Note:** This action employs the H.323<->SIP gateway function if applicable.
Resolve to external gatekeeper	If the dial string appears to be an H.323 alias, simultaneously sends LRQ messages to all of the rule's selected gatekeepers. After selecting this action for a rule, move the gatekeepers to which the rule applies from the **Available gatekeepers** box to the **Selected gatekeepers** box. **Note:** This action employs the H.323<->SIP gateway function if applicable.

For this action:	The system attempts to resolve the address as follows:
Resolve to external address	Determines if the dial string is a well-formed instance of an external address type to which the rule applies, and if so, uses the resolution procedures specified in the applicable standard for that address type. After selecting this action for a rule, select the address type or types to which the rule applies. The address types and applicable standards used to resolve them are: • SIP URI: RFCs 3261 and 3263 • H.323 Email-ID: H.225.0 specification, Appendix IV • H.323 url-ID: H.323 specification, Annex O
Resolve to conference room ID	Looks for a conference room (virtual meeting room, or VMR) that matches the dial string.
Resolve to virtual entry queue	Looks for a shared-number entry queue that matches the dial string.

See also:

Dial Rules on page 239

The Default Dial Plan and Suggestions for Modifications on page 241

Preliminary/Postliminary Scripting

A preliminary is an executable script, written in the Javascript language, that defines processing actions (filtering or transformation) to be applied to a dial string before the dial rule's action is performed.

A postliminary is an executable script, written in the Javascript language, that defines dial string transformations to be applied before querying an external device (gatekeeper, SIP peer, SBC, or MCU).

Transformation scripts output some modification of the DIAL_STRING variable (which is initially set to the dial string being evaluated).

Filtering scripts may pass the dial string on to the dial rule's action (if the filter criteria aren't met) or return one of the following:

- NEXT_RULE: Skips the rule being processed and passes the dial string to the next rule.
- BLOCK: Rejects the call.

See Sample Preliminary and Postliminary Scripts on page 255 for some examples.

The following table describes the predefined variables you can use in a preliminary or postliminary script. The script can evaluate a variable or change its value (the change isn't preserved after the script completes).

Variable	Initial value
CALLER_E164	For H.323 calls only, an array variable initially set to the set of E.164 addresses of the caller. The length of the array is 0 if the caller doesn't have an E.164 address.
CALLER_H323ID	Array variable initially set to the set of H323ID addresses of the caller. The length of the array is 0 if the caller doesn't have an H323ID address.
CALLER_IS_IPV6	"TRUE" if the caller is an IPv6 endpoint. Blank otherwise.

Variable	Initial value
CALLER_SIP_URI	Array variable initially set to the set of SIP URI addresses of the caller. The length of the array is 0 if the caller doesn't have a SIP URI address.
CALLER_SITE_AREA _CODE	Area code of the caller's site. Blank if the site doesn't have an area code.
CALLER_SITE_COUNTRY_COD E	Country code of the caller's site. Blank if the site doesn't have a country code.
CALLER_SITE_DIGITS	The number of subscriber number digits in the caller's site (that is, the length of a phone number at the site, excluding area code). Blank if the site doesn't have a number of digits.
CALLER_SITE_NAME	The name of the caller's site.
CALLER_SITE_SITE _CODE	The site code of the caller's site.
CALLER_TEL_URI	Array variable initially set to the set of Tel URI addresses of the caller. The length of the array is 0 if the caller doesn't have a Tel URI address.
DIAL_STRING	Initially set to the dial string being evaluated. If the script modifies the DIAL_STRING value, the modified value is used as the input to the dial rule action. For SIP, when the DIAL_STRING is modified by the script, it's use depends on the dial rule action:

Variable	Initial value

INPUT_SIP_HEADERS	For SIP calls only, an associative array containing the SIP headers in the received SIP INVITE message.
	Usage example:
	`if(INPUT_SIP_HEADERS["Supported"].matches(/.*ms-forking.*/))`
	`{`
	`...`
	`}`

OUTPUT_SIP_HEADERS	An empty associative array. Headers that the script adds to this array replace the corresponding headers in the received SIP INVITE message. If a header added to this array isn't in the received INVITE message, it's added to the INVITE message.
	
	Usage example 1:
	`var list = OUTPUT_SIP_HEADERS.get("User-Agent");`
	`if (list == null)`
	`{`
	`list = new java.util.LinkedList();`
	`OUTPUT_SIP_HEADERS.put("User-Agent", list);`
	`}`
	`list.add("Someone. Not a RealPresence DMA 7000.");`
	
	Usage example 2:
	`var list = OUTPUT_SIP_HEADERS.get("Some-Custom-Header");`
	`if (list == null)`
	`{`
	`list = new java.util.LinkedList();`
	`OUTPUT_SIP_HEADERS.put("Some-Custom-Header", list);`
	`}`
	`list.add("Whatever you want");`

The following table shows how different dial rule actions apply a preliminary script's modified dial string to the output SIP headers in a SIP call.

Dial Rule Action	Output SIP Headers
Resolve to registered endpoint	The To header is replaced with the modified dial string. The request URI is based on the contact address of the registered endpoint, and not replaced with the modified dial string.
Resolve to external address	The To header and the request URI are both replaced with the modified dial string.

Dial Rule Action	Output SIP Headers
Resolve to service prefix	For a SIP peer proxy of type *OCS*: The To header is replaced with the modified dial string. The request URI is based on the address, port, and transport type of the proxy, and not replaced with the modified dial string.
	For a SIP peer proxy of type *Other*: The To header and the request URI are both replaced with the modified dial string.
Resolve to peer proxy	For a SIP peer proxy of type *OCS*: The To header is replaced with the modified dial string. The request URI is based on the address, port, and transport type of the proxy, and not replaced with the modified dial string.
	For a SIP peer proxy of type *Other*: The To header and the request URI are both replaced with the modified dial string.
Resolve to IP address	The To header and the request URI are both replaced with the modified dial string.

See also:

Dial Rules on page 239

External Gatekeeper on page 101

External SIP Peer on page 105

External H.323 SBC on page 120

Add MCU Dialog Box on page 129

Script Debugging Dialog Box for Preliminaries/Postliminaries on page 254

Sample Preliminary and Postliminary Scripts on page 255

Script Debugging Dialog Box for Preliminaries/Postliminaries

The **Script Debugging** dialog box lets you test a Javascript executable script that you've added as a preliminary to a dial rule or as a postliminary for an external gatekeeper, SIP peer, SBC, or MCU. It lets you specify parameters of a call and the dial string, and see what effect the script has on the dial string.

The following table describes the fields in the **Script Debugging** dialog box.

Field	Description
Dial string	This is the DIAL_STRING variable in the script, which is initially set to the dial string being evaluated. Enter a dial string to test. Alternatively, provide the entire SIP INVITE message. Then click **Execute Script**. **Note:** For SIP, the script should always specify the schema prefix (sip or sips). For instance: `DIAL_STRING = "sip:xxx@10.33.120.58"`
Caller site	Select a site in order to set the first four caller variables.

Field	Description
Caller variables	Lists variables that can be used in the script to represent caller alias values. Enter an alias value to test for that variable.
Final result	Displays the outcome of running the script. For a dial rule preliminary, if the script rejected the dial string (skipping the dial rule action and passing it on to the next dial rule), a message tells you so. Otherwise, the transformed dial string is displayed.
Script output	Displays any output produced by the script (e.g., `println` statements).
Output SIP headers	For an external SIP peer's postliminary, displays the headers produced by the script.

See also:

Preliminary/Postliminary Scripting on page 251

Sample Preliminary and Postliminary Scripts on page 255

Sample Preliminary and Postliminary Scripts

A preliminary is an executable script, written in the Javascript language, that defines processing actions (filtering or transformation) to be applied to a dial string before the dial rule's action is performed.

A postliminary is an executable script, written in the Javascript language, that defines dial string transformations to be applied before querying an external device (gatekeeper, SIP peer, SBC, or MCU).

Transformation scripts output some modification of the DIAL_STRING variable (which is initially set to the dial string being evaluated).

Filtering scripts may pass the dial string on to the dial rule's action (if the filter criteria aren't met) or return one of the following:

- NEXT_RULE: Skips the rule being processed and passes the dial string to the next rule.
- BLOCK: Rejects the call.

The following sample scripts address many of the scenarios for which you might need a preliminary or postliminary script. You can use them as templates or starting points for your scripts.

```
// Example preliminary and postliminary scripts

////////////////////////////////
// STRIP PREFIX
// If the dial string has prefix 99, remove it
// 991234  -->  1234
DIAL_STRING = DIAL_STRING.replace(/^99/,"");


////////////////////////////////
// ADD PREFIX
// Add prefix 99 to the dial string
// 1234  -->  991234
DIAL_STRING = "99" + DIAL_STRING;
```

```
////////////////////////////////
// STRIP PREFIX (SIP)
// If the dial string is a SIP URI with prefix 99 in the user part, remove it
// SIP:991234@abc.com  -->  sip:1234@abc.com
DIAL_STRING = DIAL_STRING.replace(/^sip:99([^@]*@)/i,"sip:$1");


////////////////////////////////
// ADD PREFIX (SIP)
// If the dial string is a SIP URI, add prefix 99 to the user part
// SIP:1234@abc.com  -->  sip:991234@abc.com
DIAL_STRING = DIAL_STRING.replace(/^sip:([^@]*@)/i,"sip:99$1");


////////////////////////////////
// SUBSTITUTE DOMAIN (SIP)
// If the dial string is a SIP URI, change the domain part to "example.com"
// SIP:1234@abc.com  -->  sip:1234@example.com
DIAL_STRING = DIAL_STRING.replace(/^sip:([^@]*)@(.*)/i,"sip:$1@example.com");


////////////////////////////////
// FILTER
// If the dial string has prefix 99, do not match on this rule.  Skip to the next rule.
// 991234  -->  NEXT_RULE
if (DIAL_STRING.match(/^99/))
{
   return NEXT_RULE;
}


////////////////////////////////
// FILTER (Inverted)
// Do not match on this rule unless the dial string has prefix 99.
// 1234  -->  NEXT_RULE
if (!DIAL_STRING.match(/^99/))
{
   return NEXT_RULE;
}


////////////////////////////////
// FILTER (SIP)
// If the dial string is a SIP URI with domain "example.com", do not match on this rule.
// Skip to the next rule.
// sip:1234@example.com  -->  NEXT_RULE
if (DIAL_STRING.toLowerCase().match(/^sip:[^@]*@example\.com/))
{
```

```
   return NEXT_RULE;
}


//////////////////////////////
// PRINTLN
// Print out the information available to the script for this call.
// Information printed using the print or println functions
// is saved as a call audit event, which is viewable in the
// DMA interface under Reports > Call History, and also in the
// Script Debugging dialog box.
println("DIAL_STRING: " + DIAL_STRING);
println("CALLER_SITE_NAME: " + CALLER_SITE_NAME);
println("CALLER_SITE_COUNTRY_CODE: " + CALLER_SITE_COUNTRY_CODE);
println("CALLER_SITE_AREA_CODE: " + CALLER_SITE_AREA_CODE);
println("CALLER_SITE_DIGITS: " + CALLER_SITE_DIGITS);
println("CALLER_H323ID: " + CALLER_H323ID);
println("CALLER_E164: " + CALLER_E164);
println("CALLER_TEL_URI: " + CALLER_TEL_URI);
println("CALLER_SIP_URI: " + CALLER_SIP_URI);


//////////////////////////////
// FILTER (Site)
// Do not allow callers from the atlanta site to use this rule.
// (Caller site == "atlanta")  -->  NEXT_RULE
if (CALLER_SITE_NAME == "atlanta")
{
   return NEXT_RULE;
}


//////////////////////////////
// SITE BASED NUMERIC NICKNAMES
// Allow caller to omit country and area code when calling locally.
// Assumes that country and area codes are set in site topology.
// Assumes that all endpoints are registered with their full alias, including
// country and area code.
// 5551212  --> 14045551212
if (DIAL_STRING.length == CALLER_SITE_DIGITS)
{
   DIAL_STRING = CALLER_SITE_COUNTRY_CODE + CALLER_SITE_AREA_CODE + DIAL_STRING;
}
else if (DIAL_STRING.length == (  parseInt(CALLER_SITE_AREA_CODE.length,10)
                                + parseInt(CALLER_SITE_DIGITS,10)))
{
   DIAL_STRING = CALLER_SITE_COUNTRY_CODE + DIAL_STRING;
}
```

```
//////////////////////////////
// SITE BASED NUMERIC NICKNAMES (SIP)
// Allow caller to omit country and area code when calling locally.
// Assumes that country and area codes are set in site topology.
// Assumes that all endpoints are registered with their full alias, including
// country and area code.
// sip:5551212@example.com  --> sip:14045551212@example.com
if (DIAL_STRING.toLowerCase().match(/^sip:[^@]*@example\.com/))
{
   user = DIAL_STRING.replace(/^sip:([^@]*)@.*/i,"$1");
   if (user.length == CALLER_SITE_DIGITS)
   {
      user = CALLER_SITE_COUNTRY_CODE + CALLER_SITE_AREA_CODE + user;
   }
   else if (user.length == (  parseInt(CALLER_SITE_AREA_CODE.length,10)
                            + parseInt(CALLER_SITE_DIGITS,10)))
   {
      user = CALLER_SITE_COUNTRY_CODE + user;
   }
   DIAL_STRING = "sip:" + user + "@example.com";
}


//////////////////////////////
// Limiting calls to a certain numeric dial range.
// (like the range specified Conference Settings screen)
//
var minGeneratedRoomId = 1000;
var maxGeneratedRoomId = 9999;

var number  = parseInt(DIAL_STRING.replace(/^sip:([^@]*)@?(.*)/i,"$1"));

if (NaN != number && number > minGeneratedRoomId && number < maxGeneratedRoomId)
{
   return;
}
return NEXT_RULE;
```

See also:

Preliminary/Postliminary Scripting on page 251

Script Debugging Dialog Box for Preliminaries/Postliminaries on page 254

Hunt Groups

A hunt group is a set of endpoints that share an alias or aliases. Hunt groups can be used to define a dial string shared by a group of people, such as a technical support number. When the Polycom RealPresence DMA system Call Server resolves a dial string to the hunt group's alias, it selects a member of the group and tries to terminate the call to that member.

The system selects hunt group members in round-robin fashion. It skips members that are in a call or have unconditional call forwarding enabled. If the selected group member rejects the call or doesn't answer before the timeout, the system tries the next group member.

If all members have been attempted (or skipped) without successfully terminating the call, the system sends the BUSY message to the caller.

Registered endpoints can add themselves to a hunt group by dialing the vertical service code (VSC) for joining (default is *71) followed by the hunt group alias. They can leave a hunt group by dialing the VSC for leaving (default is *72) followed by the hunt group alias. An endpoint can belong to multiple hunt groups.

The **Hunt Groups** page lists the defined hunt groups and lets you add, edit, and delete hunt groups. The following table describes the fields in the list.

Column	Description
Name	Hunt group name.
Description	Brief description of the hunt group.
Aliases	The aliases (dial strings) that resolve to this hunt group.
Members	The endpoints included in the hunt group.
Enabled	Indicates whether the hunt group is being used.

See also:

Call Server Configuration on page 233

Edit Hunt Group Dialog Box on page 260

Add Hunt Group Dialog Box

The **Add Hunt Group** dialog box lets you define a new hunt group in the system and add members to it. The following table describes the fields in the dialog box.

Field	Description
General Info	
Name	Hunt group name.
Description	The text description displayed in the **Hunt Groups** list.
Enabled	Clearing this check box lets you define a new hunt group without putting it immediately into service.
No answer timeout	Number of seconds to wait for a hunt group member to answer a call before giving up and trying another member.
Aliases	Lists the aliases (dial strings) that resolve to this hunt group. Click **Add** to add an alias. Click **Edit** or **Delete** to change or remove the selected alias.
Hunt Group Members	
Search	Search for endpoints by alias, IP address, or registration status.

Field	Description
Available endpoints	Lists the endpoints that match the search criteria.
Member endpoints	Lists the endpoints to include in the hunt group. Use the arrow buttons to move endpoints from one list to the other.

See also:

Hunt Groups on page 258
Add Alias Dialog Box on page 260
Edit Alias Dialog Box on page 261

Edit Hunt Group Dialog Box

The **Edit Hunt Group** dialog box lets you modify the selected hunt group and add or remove members. The following table describes the fields in the dialog box.

Field	Description
General Info	
Name	Hunt group name.
Description	The text description displayed in the **Hunt Groups** list.
Enabled	Clearing this check box lets you stop using a hunt group without deleting it.
No answer timeout	Number of seconds to wait for a hunt group member to answer a call before giving up and trying another member.
Aliases	Lists the aliases (dial strings) that resolve to this hunt group. Click **Add** to add an alias. Click **Edit** or **Delete** to change or remove the selected alias.
Hunt Group Members	
Search	Search for endpoints by alias, IP address, or registration status.
Available endpoints	Lists the endpoints that match the search criteria.
Member endpoints	Lists the endpoints to include in the hunt group. Use the arrow buttons to move endpoints from one list to the other.

See also:

Hunt Groups on page 258

Add Alias Dialog Box

The **Add Alias** dialog box lets you add an alias value to the hunt group. Enter the alias in the **Value** box and click **OK**.

Aliases should be specified by their fully qualified dial string. For example, to specify that H.323 callers can call the hunt group by dialing 1234, enter `1234`. To specify that SIP callers can call the hunt group by dialing 1234, enter `sip:1234@mydomain.com`.

See also:

Hunt Groups on page 258

Add Hunt Group Dialog Box on page 259

Edit Hunt Group Dialog Box on page 260

Edit Alias Dialog Box

The **Edit Alias** dialog box lets you change an alias value assigned to the hunt group. Edit the alias in the **Value** box and click **OK**.

Aliases should be specified by their fully qualified dial string. For example, to specify that H.323 callers can call the hunt group by dialing 1234, enter `1234`. To specify that SIP callers can call the hunt group by dialing 1234, enter `sip:1234@mydomain.com`.

See also:

Hunt Groups on page 258

Add Hunt Group Dialog Box on page 259

Edit Hunt Group Dialog Box on page 260

Device Authentication

Device authentication enhances security by requiring devices registering with or calling the Polycom RealPresence DMA system to provide credentials that the system can authenticate. In turn, the Polycom RealPresence DMA system may need to authenticate itself to an external SIP peer or gatekeeper.

All authentication configurations are supercluster-wide, but note that the default realm for SIP device authentication is the cluster's domain as specified on the **Admin > Local Cluster > Network Settings** page (or `sip.dma` if no domain is specified). This allows each cluster in a supercluster to have its own realm for challenges.

The **Device Authentication** page has two tabs, **Inbound Authentication** and **Shared Outbound Authentication**.

Inbound Authentication

On the **Inbound Authentication** tab, you can:

- Configure specific SIP digest authentication settings for SIP devices.
- Maintain the Call Server's local inbound device authentication list. This list is used for both H.235 authentication (H.323 devices) and SIP digest authentication (SIP devices).
- Click the **Signaling settings** link to go to the Signaling Settings page, where you actually enable device authentication for H.323, SIP, or both (see Signaling Settings).

Shared Outbound Authentication

On the **Shared Outbound Authentication** tab, you can maintain the Call Server's general list of authentication credentials, which it uses to authenticate itself on behalf of calling devices to external SIP peers for which the appropriate device-specific credentials haven't been defined.

The Call Server intercepts and responds to authentication challenges from SIP peers on behalf of some or all devices calling though the Call Server. This feature allows authentication security between the Call Server and its peers to be completely separate from security between the endpoints and the Call Server.

When you add an external SIP peer, you can specify whether the Call Server handles challenges (401 and 407) on behalf of the source of the call or passes them on to the source of the call. You can also define authentication credentials specifically for that SIP peer. See Add External SIP Peer Dialog Box.

Note: Neighbor Gatekeepers and H.235 Authentication

For H.323, when you add a neighbor gatekeeper, you can configure the system to send its H.235 credentials when it sends address resolution requests to that gatekeeper. See Add External Gatekeeper Dialog Box.

The following table describes the fields on the **Device Authentication** page.

Field	Description
Inbound Authentication	
SIP device authentication settings	
Use default realm	This option, the default, sets the realm for the Call Server to the cluster's domain as specified on the **Network Settings** page (allowing each cluster of a supercluster to have its own realm). If no domain is specified on the **Network Settings** page, the default realm value is `sip.dma`. Clear the check box to change the string in the **Realm** field.
Realm	The realm string in an authentication challenge tells the challenged device the protection domain for which it must provide credentials. Generally, it includes the domain label of the Call Server. See RFC 2617 and RFC 3261. If you specify a realm instead of using the default, the realm you specify is used for all clusters in the supercluster.
Enable proxy authentication	Configures the Call Server to respond to unauthenticated requests with 407 (Proxy Authentication Required). If turned off, the Call Server responds to unauthenticated requests with 401 (Unauthorized).
Authentication valid time (seconds)	Specifies the time period within which the Call Server doesn't re-challenge a device that previously authenticated itself.
(table of authentication entries)	Lists the inbound device authentication entries against which the Call Server checks a device's credentials. Click Add to add a device's credentials to the list. Click **Edit** or **Delete** to change or remove the selected entry.

Field	Description
Shared Outbound Authentication	
(table of authentication entries)	Lists the authentication credential entries defined for general use by the Call Server to authenticate its requests, showing the realm in which the entry is valid and the user name. You can add, edit, or delete credential entries. Use the **Realm** or **Name** field and **Search** button above the list to narrow the list. When choosing authentication credentials to present to an external SIP peer, the Call Server looks first for an appropriate entry specific to that SIP peer (see Edit External SIP Peer Dialog Box). If there is none with the correct realm, it looks at the entries listed here.

See also:

Call Server Configuration on page 233

Add Device Authentication Dialog Box on page 263

Edit Device Authentication Dialog Box on page 263

Add Device Authentication Dialog Box

The **Add Device Authentication** dialog box appears when you click **Add** on the **Device Authentication** page while the **Inbound Authentication** tab is selected. It lets you add a device's authentication credentials to the list of entries against which the Call Server checks a device's credentials.

The following table describes the fields in the **Add Device Authentication** dialog box.

Field	Description
Device Authentication	
Name	The name that the device includes in registration and signaling requests or responses to authentication challenges. **Note:** The name and password for a device are whatever values the person who configured the device specified. They don't uniquely identify a specific device; multiple devices can have the same name and password.
Password Confirm password	The password that the device includes in registration and signaling requests or responses to authentication challenges.

See also:

Device Authentication on page 261

Edit Device Authentication Dialog Box

The **Edit Device Authentication** dialog box appears when you click **Edit** on the **Device Authentication** page while an entry on the **Inbound Authentication** tab is selected. It lets you edit the authentication credentials for the selected device.

The following table describes the fields in the **Edit Device Authentication** dialog box.

Field	Description
Device Authentication	
Name	The name that the device includes in registration and signaling requests or responses to authentication challenges. **Note:** The name and password for a device are whatever values the person who configured it specified. They don't uniquely identify a specific device; multiple devices can have the same name and password.
Password Confirm password	The password that the device includes in registration and signaling requests or responses to authentication challenges.

See also:

Device Authentication on page 261

Registration Policy

On the **Registration Policy** page, you can specify policies to control registration by endpoints. To do so, you define the following:

- **Compliance policy:** Write an executable script (using the Javascript language) that specifies the criteria for determining whether an endpoint is *compliant* or *noncompliant* with the registration policy.
- **Admission policy:** Select the action to be taken when an endpoint is compliant, and the action to be taken when an endpoint is noncompliant.

  The actions that may be taken are:

  Accept registration — The endpoint's registration request is accepted and its status becomes *Active* (see Endpoints for more information about endpoint status values).

  Block registration — The endpoint's registration request is rejected and its status becomes *Blocked*. The system automatically rejects registration attempts (and unregistration attempts) from blocked endpoints without applying the registration policy. Their status remains unchanged until you manually unblock them.

  Reject registration — The endpoint's registration request is rejected and its status remains not registered. It doesn't appear in the **Endpoints** list. Whether it can make and receive calls depends on the system's rogue call policy (see Call Server Settings on page 234). If the endpoint sends another registration request, the registration policy is applied to that request.

  Quarantine registration — The endpoint's registration request is accepted, but its status becomes *Quarantined*. It can't make or receive calls. The system processes registration attempts (and unregistration attempts) from quarantined endpoints, but doesn't apply the registration policy. Their status remains either Quarantined if registered or Quarantined (Inactive) if unregistered until you manually remove them from quarantine.

You can also specify whether the policy is to be applied only to new registrations, or also to re-registrations with changed properties.

The following table describes the fields on the page.

Field	Description
Allow site-less registrations	If this option is selected, endpoints that don't belong to a configured site or territory can register with the Call Server. Otherwise, only endpoints in a subnet configured in the site topology can register.
When compliant	Select the action to take when the registration policy script returns COMPLIANT.
When noncompliant	Select the action to take when the registration policy script returns NONCOMPLIANT.
Policy Applies	Select whether to apply the registration policy script only to new registrations or also to changed re-registrations. If you choose the latter, you can optionally select **Ignore IP and port changes** so that the registration policy script is not applied if those are the only changes.
Registration policy compliance script	Type (or paste) the registration policy script you want to apply. Then click **Debug this script** to test the script with various variables. Click **Reapply policy** to run the script, applying any changes you've made to existing registered endpoints.
Inactive registration deletion days	Select to specify that endpoints whose status is *Inactive* (that is, their registrations have expired) are deleted from the system after the specified number of days. Some dial rule actions, such as **Resolve to registered endpoint**, can route calls to endpoints with an inactive registration. Deleting the registration record is the only way to prevent resolution to an inactive endpoint.

See also:

Call Server Configuration on page 233

Script Debugging Dialog Box for Registration Policy Scripts on page 268

Sample Registration Policy Scripts on page 268

Registration Policy Scripting

A registration policy script is an executable script, written in the Javascript language, that defines the criteria to be applied to registration requests in order to determine what to do with them. The script can specify any number of criteria, and they can be as broad or narrow as you want.

A script can return `COMPLIANT` or `NONCOMPLIANT`. The corresponding settings on the **Registration Policy** page let you specify what action to take for each of these return values.

A script can also assign a value (up to 1000 characters) to the `EP_EXCEPTION` variable. This variable's initial value is blank (empty string). Assigning a non-blank value to it causes an *exception* to be recorded for the endpoint being processed. Exceptions appear on the **Endpoints** page, and you can search for endpoints with exceptions. See Endpoints on page 91.

Exceptions can serve a variety of purposes, from specifying the reason a registration was rejected to simply recording information about the request for future reference. For instance, you may want all endpoints to conform to a specific alias dial string pattern, but not want to quarantine those that don't comply. Assigning

an exception to non-compliant endpoints allows you to find them on the **Endpoints** page so that you can contact the owners.

Note: Registration Policy Scripting Tips

When you click **Update**, a Javascript parser evaluates the registration policy script. If there is a syntax error in the script, an error message reports the problem and asks if you still want to update. You may do so in order to save a work in progress, but the script won't be used until it's valid. Note that the parser's capabilities are limited and its error messages may not pinpoint the problem as clearly as you might like. More capable script testing services are available, such as JSLint.

We also encourage you to use **Debug this script** to test your script thoroughly with various dial strings and other parameters. See Script Debugging Dialog Box for Preliminaries/Postliminaries on page 254.

See Sample Registration Policy Scripts on page 268 for some script examples.

The following table describes the other predefined variables you can use in a registration policy script. Each time the script runs, it gets the initial values for these variables from the registration request being processed. The script can evaluate a variable or change its value (the change isn't preserved after the script completes).

Variable	Initial value
EP_DEFINED_IN_CMA	"TRUE" if the Polycom RealPresence DMA system is integrated with a RealPresence Resource Manager or CMA system and the endpoint is defined in that system.
EP_H323_DIALEDDIGITS_ALIAS	Endpoint alias value associated with H.323 dialedDigits or blank. This is an array that can contain multiple values. Separate the values with commas.
EP_H323_EMAIL_ID_ALIAS	Endpoint alias value associated with H.323 email-ID or blank. This is an array that can contain multiple values. Separate the values with commas.
EP_H323_H323_ID_ALIAS	Endpoint alias value associated with H.323 H323-ID or blank. This is an array that can contain multiple values. Separate the values with commas.
EP_H323_TRANSPORTID_ALIAS	Endpoint alias value associated with H.323 transportID or blank. This is an array that can contain multiple values. Separate the values with commas.
EP_H323_URL_ID_ALIAS	Endpoint alias value associated with H.323 URL-ID or blank. This is an array that can contain multiple values. Separate the values with commas.
EP_IP	Endpoint IP address. Enter it here in normal dot or colon notation (such as 1.2.3.4 for IPv4). In the script, this is represented as an array. If the IP address is IPv4, there are 4 elements in the array. If the IP address is IPv6, there are 8 elements in the array.

Variable	Initial value
EP_IS_IPV4	“TRUE” if EP_IP is an IPv4 address. Blank otherwise.
EP_IS_IPV6	“TRUE” if EP_IP is an IPv6 address. Blank otherwise.
EP_MODEL	Endpoint model.
EP_OWNER	Endpoint owner.
EP_OWNER_DOMAIN	Endpoint owner's domain.
EP_REG_IS_H323	“TRUE” if the registration request uses H.323 signaling. Blank otherwise.
EP_REG_IS_SIP	“TRUE” if the registration request uses SIP signaling. Blank otherwise.
EP_SIP_SIP_URI_ALIAS	Endpoint alias value associated with SIP sip: URI or blank. This is an array that can contain multiple values. Separate the values with commas.
EP_SIP_SIPS_URI_ALIAS	Endpoint alias value associated with SIP SIPS: URI or blank. This is an array that can contain multiple values. Separate the values with commas.
EP_SIP_TEL_URI_ALIAS	Endpoint alias value associated with SIP TEL: URI or blank. This is an array that can contain multiple values. Separate the values with commas.
EP_VERSION	Endpoint software version number.
REG_IS_PERMANENT	“TRUE” if endpoint is already permanently registered. Blank otherwise.
REG_SITE_AREA_CODE	Area code of the site where the endpoint is attempting to register.
REG_SITE_COUNTRY_CODE	Country code of the site where the endpoint is attempting to register.
REG_SITE_DIGITS	Number of digits in the subscriber number configured for the site where the endpoint is attempting to register.
REG_SITE_NAME	Site where endpoint is attempting to register.

Variable	Initial value
REG_SUBNET_IP_ADDRESS	IP address of the subnet where the endpoint is attempting to register. Enter it here in normal dot or colon notation (such as 1.2.3.4 for IPv4). In the script, this is represented as an array. If the IP address is IPv4, there are 4 elements in the array. If the IP address is IPv6, there are 8 elements in the array.
REG_SUBNET_MASK	IP mask of the subnet where the endpoint is attempting to register. Enter it here in normal dot or colon notation (such as 1.2.3.4 for IPv4). In the script, this is represented as an array. If the IP address is IPv4, there are 4 elements in the array. If the IP address is IPv6, there are 8 elements in the array.

See also:

Registration Policy on page 264

Script Debugging Dialog Box for Registration Policy Scripts

When you click **Debug this script** on the **Registration Policy** page, the **Script Debugging** dialog box appears, in which you can test your script.

The dialog box lets you enter or select test values for the predefined variables (see Registration Policy Scripting on page 265 for a list of these). Select an **Endpoint Site** and **Subnet** to populate the site/subnet-related fields, which are read-only.

The **Script Output** box displays any output produced by the script when it runs (e.g., `println` statements and error messages). This output is recorded in the registration history.

The **Script Result** box displays the return value (`COMPLIANT` or `NONCOMPLIANT`) from running the script with the specified test values. If the script assigned a value to the `EP_EXCEPTION` variable, it also displays that.

Testing your script is an iterative process. Specify test values for the variables used in your script. Then click **Run Script** to see the results of applying the script using those variable values. Repeat as often as necessary, using different variable values.

If necessary, make changes to your script and then test some more, until you're satisfied that the script accomplishes what you intended.

See also:

Registration Policy on page 264

Registration Policy Scripting on page 265

Sample Registration Policy Scripts

A registration policy script is an executable script, written in the Javascript language, that defines the criteria to be applied to registration requests in order to determine what to do with them. For each request evaluated, the script must return `COMPLIANT` or `NONCOMPLIANT`. See Registration Policy Scripting on page 265 for more information.

The following sample scripts illustrate some of the ways in which registration requests can be evaluated. You can use them as templates or starting points for your scripts.

```
////////////////////////////////
// Reject endpoints with the specified problem software version and all
// SIP registrations. Record an appropriate exception for each case.
//
var result = COMPLIANT;

if (EP_VERSION == "1.2.3.4")
{
   EP_EXCEPTION += "Problem version 1.2.3.4 is not allowed\n";
   result = NONCOMPLIANT;
}

if (!EP_REG_IS_H323)
{
   EP_EXCEPTION += "SIP is not allowed\n";
   result = NONCOMPLIANT;
}
return result;


////////////////////////////////
// Reject registration attempts by the SIPVicious SIP auditing tool
// (NOTE: typically this is used when DMA has public internet connectivity
//  or in conjunction with the DMA Guest Port feature)
//
var result = COMPLIANT;

if (EP_REG_IS_SIP && EP_MODEL != null && EP_MODEL.toLowerCase() == "friendly-scanner")
{
   EP_EXCEPTION += "SIPVicious is not allowed.";
   result = NONCOMPLIANT;
}
return result;


////////////////////////////////
// Reject aliases that aren't the right length; otherwise accept.
// IF REG_SITE_COUNTRY_CODE = 1
//    AND IF REG_SITE_AREA_CODE = 303
//    AND IF REG_SITE_DIGITS = 4
// AND IF EP_H323_DIALEDDIGITS_ALIAS[0].length()!= 8
// return NONCOMPLIANT;
//
var CCAndAC = REG_SITE_COUNTRY_CODE + REG_SITE_AREA_CODE;
var DDlength = EP_H323_DIALEDDIGITS_ALIAS[0].length() ;
var SumDigits = parseInt(CCAndAC.length) + parseInt(REG_SITE_DIGITS);
```

```
if (DDlength > 0)
{
   if (DDlength != SumDigits) return NONCOMPLIANT;
}


////////////////////////////////
// Reject aliases that don't start with CC and AC (country code and area code);
// otherwise accept.
//
var CCAndAC = REG_SITE_COUNTRY_CODE + REG_SITE_AREA_CODE;
var DD_CCAndAC = EP_H323_DIALEDDIGITS_ALIAS[0].substring(0,CCAndAC.length);

if (DD_CCAndAC != CCAndAC) return NONCOMPLIANT;


////////////////////////////////
// Reject aliases that don't start with AC (area code).
//
var AC = REG_SITE_AREA_CODE;
var DD_AC = EP_H323_DIALEDDIGITS_ALIAS[0].substring(0,AC.length);
var SIP_URI_AC = EP_SIP_TEL_URI_ALIAS.substring(0,AC.length);

if (DD_AC != AC) return NONCOMPLIANT;
if (SIP_URI_AC != AC) return NONCOMPLIANT;


////////////////////////////////
// A sample script that implements a whitelist of IP addresses for endpoints
// that can register.
// *** Note this does not take into account IPv6 addressing ***
//
var nparts;
var IPstring;

whitelist = new Array(
"10.20.30.40",     // specify exact match IP address using quotes
/192.168.3.*/,     // specify regular expression to match using slashes
"192.168.174.233"
);

if (EP_IS_IPV4)
{
   nparts = 4;
}

for (i = 0; i<nparts; i++)
{
   if (i == 0)
   {
```

```
        IPstring = EP_IP[i];
    }
    else
    {
         IPstring += "." + EP_IP[i]
    }
}

for (i=0; i<whitelist.length; i++)
{
    if (IPstring.match(whitelist[i]))
    {
        return COMPLIANT;
     }
}
return NONCOMPLIANT;
```

See also:

Registration Policy on page 264

Registration Policy Scripting on page 265

Script Debugging Dialog Box for Registration Policy Scripts on page 268

Prefix Service

The **Prefix Service** page provides a complete list of all configured prefixes in one place, so you can easily determine what prefixes are in use and whether any conflicts exist.

For your convenience, its **Actions** list lets you do the following:

- Add, edit, or delete any of the devices without having to navigate back to the specific page for that device type.
- Add, edit, or delete simplified ISDN gateway dialing services (see Add Simplified ISDN Gateway Dialing Prefix Dialog Box on page 272).
- Edit the name, vertical service code, or description of the forwarding and hunt group services and enable or disable them (see Edit Vertical Service Code Dialog Box on page 273).

The following table describes the fields in the list.

Column	Description
Service/Device Name	The name of the service or device assigned the specified prefix(es). Devices with no prefix(es) assigned are listed, but shown as disabled.
Prefix Range	The dial string prefix(es) assigned to this service or device.
Service/Device Type	Type of service or device.
Description	Brief description of the service or device.
Service Status	Indicates whether the service or device is enabled or disabled.

See also:

Call Server Configuration on page 233
Add Simplified ISDN Gateway Dialing Prefix Dialog Box on page 272
Edit Simplified ISDN Gateway Dialing Prefix Dialog Box on page 273

Add Simplified ISDN Gateway Dialing Prefix Dialog Box

The **Add Simplified ISDN Gateway Dialing Prefix** dialog box lets you create a new prefix-driven simplified ISDN gateway dialing service for using external ISDN gateways.

Note: ISDN Gateway vs. H.323<->SIP Gateway
This feature is not related to the Polycom RealPresence DMA system's built-in H.323<->SIP gateway. Simplified ISDN gateway dialing is for routing calls to H.320 or PSTN protocol gateways.
This feature isn't supported for calls from SIP endpoints, but SIP endpoints can make ISDN gateway calls by directly calling an MCU/gateway using its direct dial-in prefix (see Edit MCU Dialog Box on page 133).

The following table describes the fields in the dialog box.

Column	Description
Name	A display name for this service.
Description	Brief description of the service.
Enabled	Clearing this check box lets you turn off the service without deleting it.
Simplified ISDN dialing prefix	The dial string prefix(es) assigned to this service. Enter a single prefix (44), a range of prefixes (44-47), multiple prefixes separated by commas (44,46), or a combination (41, 44-47, 49). If your dial plan uses the *Dial services by prefix* dial rule (in the default dial plan) to route calls to services, all dial strings beginning with an assigned prefix are forwarded to this service for resolution.
Use all ISDN gateways	Indicates whether this service applies to all available gateways or only those selected below.
Available ISDN gateways	Lists the ISDN gateways that have at least one session profile specifying an H.320 or PSTN protocol. See Edit MCU Dialog Box on page 133.
Selected ISDN gateways	Lists the selected ISDN gateways. The arrow buttons move gateways from one list to the other.

See also:

Call Server Configuration on page 233
Prefix Service on page 271

Edit Simplified ISDN Gateway Dialing Prefix Dialog Box

The **Edit Simplified ISDN Gateway Dialing Prefix** dialog box lets you edit a prefix-driven simplified ISDN gateway dialing service.

Note: ISDN Gateway vs. H.323<->SIP Gateway

This feature is not related to the Polycom RealPresence DMA system's built-in H.323<->SIP gateway. Simplified ISDN gateway dialing is for routing calls to H.320 or PSTN protocol gateways.

This feature isn't supported for calls from SIP endpoints, but SIP endpoints can make ISDN gateway calls by directly calling an MCU/gateway using its direct dial-in prefix (see Edit MCU Dialog Box on page 133).

The following table describes the fields in the dialog box.

Column	Description
Name	A display name for this service.
Description	Brief description of the service.
Enabled	Clearing this check box lets you turn off the service without deleting it.
Simplified ISDN dialing prefix	The dial string prefix(es) assigned to this service. Enter a single prefix (44), a range of prefixes (44-47), multiple prefixes separated by commas (44,46), or a combination (41, 44-47, 49). If your dial plan uses the *Dial services by prefix* dial rule (in the default dial plan) to route calls to services, all dial strings beginning with an assigned prefix are forwarded to this service for resolution.
Use all ISDN gateways	Indicates whether this service applies to all available gateways or only those selected below.
Available ISDN gateways	Lists the gateways that have at least one session profile specifying an H.320 or PSTN protocol. See Edit MCU Dialog Box on page 133.
Selected ISDN gateways	Lists the selected gateways. The arrow buttons move gateways from one list to the other.

See also:

Call Server Configuration on page 233

Prefix Service on page 271

Edit Vertical Service Code Dialog Box

The **Edit Vertical Service Code** dialog box lets you edit a call forwarding or hunt group service invoked when callers dial the vertical service code (VSC) for that service followed by the alias. These services are included on the **Prefix Service** page and can't be deleted. But you can disable them or change their names, descriptions, or VSCs (shown in the **Prefix Range** column of the **Prefix Service** page). If you change the VSCs, be sure to inform users of the change.

The following table describes the fields in the dialog box.

Column	Description
Type	The type of service. Display only.
Name	A display name for this service.
Code	The vertical service code (VSC) for this service. Must consist of an asterisk/star (*) followed by two digits. Registered endpoints can activate this feature by dialing the VSC followed by the alias. They can deactivate it by dialing the VSC alone.
Description	Brief description of the service.
Enabled	Clearing this check box lets you turn off the service.

See also:

Call Server Configuration on page 233

Prefix Service on page 271

Embedded DNS

In a superclustered configuration, the clusters that make up the supercluster automatically take over for each other in the event of an outage. In order to gain the full benefit of this feature, however, the endpoints that are registered to each cluster must re-register to a new cluster when the new cluster takes over.

This can be accomplished by specifying the gatekeeper or SIP proxy that each endpoint will register to as a site's domain name, rather than an IP address. Then, when there is a failover, the DNS A record for that site's domain name can be mapped to a different IP address, changing the Call Server that each endpoint is registered to.

The embedded DNS capability of the Polycom RealPresence DMA system automates this procedure.

Each Polycom RealPresence DMA server hosts its own embedded DNS server. It publishes a DNS CNAME record for each site. That CNAME record maps to the active cluster with which endpoints at the site should register. Whenever responsibility for the site moves from one cluster to another, the change is automatically published by the embedded DNS server. Endpoints will automatically re-register to the correct cluster.

Note: Embedded DNS Server does not support IPv6

The embedded DNS functionality is not supported in an IPv6 environment.

You can enable these embedded DNS servers on the **Embedded DNS** page. This is a supercluster-wide setting.

If you wish to use this feature, your enterprise DNS must place the Polycom RealPresence DMA supercluster in charge of resolving the sub-domain specified on this page. To do this, you must:

- Add NS records to your enterprise DNS so that it refers requests to resolve the site-based logical host name (see Site Information Dialog Box) to these embedded DNS servers.
- Configure your enterprise DNS to forward requests for names in the site-based logical host name to any of the clusters in the supercluster.

For more information, see Add Required DNS Records for the Polycom RealPresence DMA System.

The following table describes the fields on the **Embedded DNS** page.

Field	Description
Enable embedded DNS service	Enables the embedded DNS servers.
Call server sub-domain controlled by RealPresence DMA	The fully qualified domain name of the enterprise domain for which the RealPresence DMA system is to provide DNS. For instance, for the base domain example.com, the sub-domain that the RealPresence DMA system services might be: `callservers.example.com` This is the logical Call Server domain name for which you must create NS records in your enterprise DNS. And this is the domain name that the system combines with each site name to form the logical FQDN that endpoints in each site should register to.

To enable DNS publishing

1. Be sure you've added the required NS records, one for each cluster in the supercluster, to your enterprise DNS and have configured it to forward requests for names in the logical Call Server domain to any of the clusters in the supercluster (see Additional DNS Records for the Optional Embedded DNS Feature).
2. Go to **Admin > Call Server > Embedded DNS**.
3. Click **Enable embedded DNS service**.
4. In the **Call server sub-domain controlled by RealPresence DMA** field, enter the logical Call Server domain name (the enterprise domain for which the RealPresence DMA system is to provide DNS) and click **Update**.
5. Reconfigure your endpoints to register to the correct domain name for their site.

   To determine the correct domain name for a site, go to **Network > Site Topology > Sites**, select the site, and click **Site Information**. The **Logical host name** field displays the correct domain name. It takes the form:

   `callserver-<site name>.<logical Call Server domain name>`

   For instance, if the fully qualified domain name for the logical Call Server domain is callservers.example.com, the correct domain name for endpoints in the paris site is:

   `callserver-paris.callservers.example.com`

Note: Verify RealPresence Resource Manager Settings

If you have a Polycom RealPresence Resource Manager system integrated with the RealPresence DMA system, make sure that in its **Edit DMA** dialog box, **Support DMA Supercluster** is selected and **Call server sub-domain** matches the value in the RealPresence DMA system's **Call server sub-domain controlled by RealPresence DMA** field.

Enter all network/DNS-related information in all lower case to avoid possible case-sensitivity issues with various devices and ensure interoperability.

See also:

Call Server Configuration

History Retention Settings

The Polycom RealPresence DMA system is preconfigured with the number of history records of various types to retain. When the retention limit for a record type is reached, the system purges a specific number of the oldest records of that type.

The following table shows the retention limit for each record type and how many are purged at a time when the retention limit is reached. The values specified are for each cluster, not the total for the entire supercluster.

Record Type	Retention Limit	Number of Records Purged When Limit Is Reached
Registration history	505,000	5,000
Registration signaling	2,000,000	20,000
Call history	505,000	5,000
Call signaling history	12,625,000	125,000
Conference history	202,000	2,000
CDR export history	11,000	1,000

Contact Polycom Global Services if you want to discuss the possibility of changing the retention limits.

The **History Retention Settings** page lets you specify whether to retain registration history records, and if so, whether to include registration keep-alive messages. You can also specify how many repeated low-value signaling records to retain. The following table describes the fields on the page. Only users with the Auditor role can access this page.

The settings on this page are supercluster-wide (the clusters aren't independently configured).

Field	Description
Enable recording of registration history	Enables the system to retain Call Server registration records (see Registration History Report on page 407).
Include keep-alive messages in registration history	If selected, the Call Server history includes the keep-alive messages sent by registered endpoints and the Call Server's responses. Selecting this option significantly increases the number of Call Server registration records per period of time.
Number of repeated low-value signaling event records to retain	The number of less-important signaling messages (such as INFO messages about in-call status) to retain for a given call (from 0 to 10; default is 3). Once the limit is reached, subsequent messages of that type are processed, but not recorded in the call signaling history.

To configure history record retention

1. Log into the system as a user with the Auditor role and go to **Admin > Call Server > History Retention Settings**.
2. Specify whether to record registration history, and if so, whether to include keep-alive messages.

3 Specify how many low-value signaling records to retain.

4 Click **Update**.

A dialog box informs you that the configuration has been updated.

5 Click **OK**.

See also:

Call Server Configuration on page 233

Site Topology

This chapter describes the following Polycom® RealPresence® Distributed Media Application™ (DMA®) 7000 site topology configuration topics:

About Site Topology

Site topology information logically describes your network and its interfaces to other networks, including the following elements:

- Site — A local area network (LAN) that generally corresponds with a geographic location such as an office or plant. A site contains one or more network subnets, so a device's IP address identifies the site to which it belongs.
- Network cloud — A Multiprotocol Label Switching (MPLS) network cloud defined in the site topology. An MPLS network is a private network that links multiple locations and uses label switching to tag packets with origin, destination, and quality of service (QOS) information.
- Site link — A network connection between two sites or between a site and an MPLS network cloud.
- Site-to-site exclusion — A site-to-site connection that the site topology doesn't permit a voice or video call to use.
- Territory — A collection of one or more sites for which a Polycom RealPresence DMA cluster is responsible. Territories serve multiple purposes in a Polycom RealPresence DMA system deployment. See Territories on page 294.

Note: Network Topology and Site Topology Could Differ

Site topology information provides a logical model representation of a network topology, not necessarily a fully accurate literal representation of a full network.

The Polycom RealPresence DMA system uses site topology information for a variety of purposes, including cascade for bandwidth conferences, bandwidth management, Session Border Controller selection, and cluster responsibility management in a supercluster. It can get it in one of two ways:

- If you have a Polycom RealPresence Resource Manager or CMA system, integrate the Polycom RealPresence DMA system with it (see Resource Management System Integration on page 178) to automatically get its site topology information.

Note: Integration Not Supported in Maximum Security Mode
Integration with a Polycom RealPresence Resource Manager or CMA system is not supported in **Maximum security** mode.

- If you don't have a Polycom RealPresence Resource Manager or CMA system, enter site topology information about your network directly into the Polycom RealPresence DMA system's site topology pages.

If your Polycom RealPresence DMA system is superclustered (see About Superclustering on page 226), site topology data only needs to be created (or obtained from a Polycom RealPresence Resource Manager or CMA system) on one cluster of the supercluster. It's replicated across the supercluster.

For a conference with cascading for bandwidth enabled, the Polycom RealPresence DMA system uses the site topology information to route calls to the nearest eligible MCU (based on pools and pool orders) that has available capacity and to create the cascade links between MCUs.

When determining which MCU is "nearest" to a caller and which path is best for a cascade link, the system takes into account the bandwidth availability and bit-rate limitations of alternative paths.

Note: Cascade Considerations
Cascading for bandwidth uses a hub-and-spoke configuration so that each cascaded MCU is only one link away from the "hub" MCU, which hosts the conference. The conference is hosted on the same MCU that would have been chosen in the absence of cascading, using the pool order applicable to the conference. See MCU Pool Orders on page 145.

The cascade links between MCUs must use H.323 signaling. For conferences with cascading enabled, the Polycom RealPresence DMA system selects only MCUs that have H.323 signaling enabled.

This cascade link requirement doesn't affect endpoints, which may dial in using SIP (assuming the MCUs and the Polycom RealPresence DMA system are also configured for SIP signaling).

See also:

Site Links on page 291

Site-to-Site Exclusions on page 293

Territories on page 294

Network Clouds on page 297

Site Topology Configuration Procedures on page 299

Sites

The **Sites** page contains a list of the sites defined in the site topology.

If the system is integrated with a Polycom RealPresence Resource Manager or CMA system, it receives this information from that system, and this page is read-only. If not, you can enter site information.

The default Internet/VPN entry always exists and can't be edited or deleted. It can't be assigned to a territory or controlled by a cluster. Endpoints whose subnet isn't in any defined site in the enterprise network are considered to be in the Internet/VPN site. They can register to a cluster only if site-less registrations are allowed (see Registration Policy on page 264).

The protocol-specific routing settings for a site determine whether and how calls from that site can traverse the firewall to reach endpoints outside the enterprise network:

- Via a transparent firewall
- Via the specified SBC
- Not at all

The site's routing settings are used when the dial string is resolved by a dial rule using the **Resolve to external address** or **Resolve to IP address** action (rules 5 and 6, respectively, of the default dial plan; see Dial Rules on page 239).

Note: Consider Adding an SBC or SIP Peer

Alternatively, you can add an H.323 SBC (see External H.323 SBC on page 120) or a SIP peer (see External SIP Peer on page 105) that can only be reached by dialing a specific prefix or prefixes. A dial string beginning with such a prefix can be resolved by the dial rule using the **Resolve to service prefix** action (rule 4 of the default dial plan).

The commands in the **Actions** list let you add a site, edit or delete sites (other than Internet/VPN), and see information about a site, including the number of devices of each type it contains.

Note: Avoid Case-Sensitivity Issues When Entering Network Configuration

Enter all network/DNS-related information in all lower case to avoid possible case-sensitivity issues with various devices and ensure interoperability.

The following table describes the fields in the list.

Column	Description
Name	Name of the site.
Description	Description of the site.
Country Code	The country code for the site's location.
Area Code	The city or area code for the site's location.
Max Total Bandwidth (Mbps)	The total bandwidth limit for voice and video calls.
Max Per-Call Bit Rate (kbps)	The per-call bit rate limit for voice and video calls. **Note:** Bit rate is not the same as bandwidth. Since the bit rate applies in both directions and there is overhead, the actual bandwidth consumed is about 2.5 times the bit rate.
Territory	The territory to which the site belongs, which determines the Polycom RealPresence DMA cluster responsible for it.

See also:

About Site Topology on page 278

Add Site Dialog Box on page 282

Edit Site Dialog Box on page 285

Site Topology Configuration Procedures on page 299

Site Information Dialog Box

Lets you view information about the selected site, including which subnets are associated with it and counts of the devices it contains.

The following table describes the fields in the dialog box, all of which are read-only.

Field	Description
Site Info	
Site name	Name of the site. **Note:** If the system's embedded DNS service is enabled (see Embedded DNS on page 274), the system uses the site name to create the **Logical host name** (see below). We strongly recommend: • Using site names that contain only characters permitted in a host name (letters, numbers, and internal hyphens). • Entering network/DNS-related information in all lower case to avoid possible case-sensitivity issues with various devices and ensure interoperability.
Description	A brief description of the site.
Logical host name	If the system's embedded DNS service is enabled (see Embedded DNS on page 274), this is the logical FQDN that endpoints in this site should register to. The system generates this by combining "callserver," the site name, and the value specified in the **Call server sub-domain controlled by RealPresence DMA** field on the **Embedded DNS** page. If the site name contains a character not permitted in a host name, the system replaces it with a dash (hyphen) followed by the hex code of the ASCII character. For instance, if the site is named "paris (north)" and the call server sub-domain is "callservers.example.com," the logical host name would be: callserver-paris-20-28north-29.callservers.example.com
Device Types	
MCUs	The number of MCUs in the site.
RealPresence DMAs	The number of Polycom RealPresence DMA systems in the site.
VBPs	The number of Polycom Video Border Proxy NAT/firewall traversal appliances in the site.
Endpoints	The number of registered endpoints in the site.
Subnets	A list of the subnets in the site.

See also:

About Site Topology on page 278

Sites on page 279

Add Site Dialog Box

Lets you define a new site in the Polycom RealPresence DMA system's site topology and specify which subnets are associated with it. The following table describes the fields in the dialog box.

Field	Description
General Info	
General Settings	
Site name	A meaningful name for the site (up to 128 characters). **Note:** If the system's embedded DNS service is enabled (see Embedded DNS on page 274), the system uses the site name to create the **Logical host name** (see Site Information Dialog Box on page 281). We strongly recommend: • Using site names that contain only characters permitted in a host name (letters, numbers, and internal hyphens). • Entering network/DNS-related information in all lower case to avoid possible case-sensitivity issues with various devices and ensure interoperability.
Description	A brief description of the site (up to 200 characters).
Bandwidth Settings	
Max bandwidth (Mbps)	The total bandwidth limit for voice and video calls. If not selected, voice and video calls can use all of the available bandwidth. This setting lets you restrict voice and video calls to only a portion of the available bandwidth, ensuring that some bandwidth always remains available for other network traffic.
Max bit rate (kbps)	The per-call bit rate limit for voice and video calls. **Note:** Bit rate is not the same as bandwidth. Since the bit rate applies in both directions and there is overhead, the actual bandwidth consumed is about 2.5 times the bit rate selected. When you specify both the bandwidth and bit rate limits, the dialog box shows you how many calls at that bit rate the specified bandwidth limit supports.
Territory Settings	
Territory	Assigns the site to a territory, and thus to a Polycom RealPresence DMA cluster.

Field	Description
ISDN Number Assignment	
Assignment method	The ISDN number assignment method for the devices in this site. The numbers being assigned are endpoint aliases in the form of E.164 numbers, which can be dialed by both IP endpoints registered to the Call Server and ISDN endpoints dialing in through an ISDN gateway. The assignment options are: • **No assignment**. Select this option when you don't want to define a range of E.164 aliases for the site. • **Manual assignment**. Select this option to define a range (or ranges) of E.164 aliases for the site, but not automatically assign those aliases to endpoints. • **Automatic assignment**. Select this option to define a range (or ranges) of E.164 aliases for the site and automatically assign those aliases to endpoints that register without an alias. After an E.164 alias is assigned to an endpoint, it's reserved for use as long as that endpoint remains registered with the Polycom RealPresence DMA system. If you decide not to enable **Automatic assignment**, you can always manually add E.164 aliases to endpoints from the **Endpoints** page (see Edit Device Dialog Box on page 97). And endpoints will have any aliases with which they register.
Dialing method	The ISDN inward dialing method for the site: • **DID (Direct Inward Dial)**. Select this option if your ISDN gateway is provisioned with a range of phone numbers from the ISDN service provider, and each of these numbers will be assigned to an endpoint as an alias. • **Gateway Extension Dialing**. Select this option if your ISDN gateway's ISDN connection is provisioned with a single gateway phone number from the ISDN service provider, and endpoints will be assigned an extension (E.164 alias) that's internal to the company and doesn't correspond to any number that can be dialed on the PSTN. Endpoints can be dialed from the PSTN by dialing the ISDN gateway phone number, followed by a delimiter (usually a #) and the extension number. The gateway receives the full number from the PSTN and dials only the extension number on the IP network.
ISDN Outbound Dialing	
Override ITU dialing rules	Check this box to override the standard dialing rules, established by the International Telecommunications Union, when dialing out using an ISDN gateway. The default setting, which does not override ITU dialing rules, is usually accurate for placing outbound calls. Enable this setting if you find that ISDN gateway calls from registered endpoints in this site are unsuccessful.
PBX access code	The code needed to access the ISDN/PSTN network through the site's PBX when dialing out.

Field	Description
Country code	The country code for the site's location. Click the CC button to select from a list of countries. To apply ITU dialing rules, the system must compare the country code of the gateway site with the country code of the call's destination.
Area code	The city or area code for the site's location. Leading zeroes are optional. For example, the city code for Paris is 01, but you can enter either 01 or 1 in this field. To apply ITU dialing rules, the system must compare the area code of the gateway site with the area code of the call's destination.
Always dial area code	Specifies that the area code should always be included in the phone number.
Always dial national prefix	Specifies that the national prefix should always be included in the phone number.
Length of subscriber number	The number of digits in a phone number. For example, in the United States and other areas using the North American Numbering Plan (NANP), subscriber numbers have seven digits.
ISDN Range Assignment (for DID dialing method)	
Length of call line identifier	The number of digits in the Call Line Identifier (CLID), which is the dialed number. The maximum is 17. For example, in the United States, the number of digits in the CLID is often 7 for outside local calls and 11 for callers in a different area code.
Length of short phone number	The number of digits in the short form of the dialing number. For example, in the United States, internal extensions are usually four or five digits.
ISDN Number Ranges	The number ranges available for assignment to endpoints in the site. Click **Add** to add a new range of numbers. Click **Edit** or **Delete** to change or delete the selected range. The start and end numbers in the range should be entered with the same number of digits. If the range is 303-223-1000 to 1999, enter 3032231000 and 3032231999.
ISDN Range Assignment (for gateway extension dialing method)	
ISDN gateway number	An ISDN gateway phone number for the site. This field is just for your reference. It's not used by the software to process calls. If the site has more than one ISDN gateway, you'll need to know their access numbers and determine how to instruct inbound users to call.
E.164 start	The beginning of the range of E.164 extensions associated with the site.
E.164 end	The end of the range of E.164 extensions associated with the site. The start and end numbers in the range should be entered with the same number of digits.
H.323 Routing	
Internet calls are not allowed	Disables H.323 calls to the internet.

Field	Description
Allowed via H.323-aware firewall	Allows H.323 calls to the internet through a firewall.
Allowed via H.323-aware SBC or ALG	Enables H.323 calls to the internet through the specified session border controller (SBC) or application layer gateway (ALG).
Call signaling address (IPv4)	The call signaling address for the H.323 SBC or ALG.
Port	The call signaling port for the H.323 SBC or ALG.
SIP Routing	
Internet calls are not allowed	Disables SIP calls to the internet.
Allowed via SIP-aware firewall	Enables calls to the internet through a firewall.
Allowed via SIP-aware SBC or ALG	Enables SIP calls to the internet through the specified session border controller (SBC) or application layer gateway (ALG).
Call signaling address (IPv4)	The call signaling address for the SBC or ALG.
Port	The call signaling port for the SBC or ALG.
Subnets	Lists the subnets in the site. Click **Add** to add a subnet. Select a subnet in the table and click **Edit** or **Delete** to modify or remove it.
Subnet Name	The unique name of the subnet.
IP Address	The IP address of the subnet.
Subnet Mask Length	The CIDR (Classless Inter-Domain Routing) prefix size value (the number of leading 1 bits in the routing prefix mask). This value, together with the **IP Address**, defines the subnet. For IPv4, a value of 24 is equivalent to specifying a dotted-quad subnet mask of 255.255.255.0. A value of 16 is equivalent to specifying a subnet mask of 255.255.0.0.
Max Bandwidth (Mbps)	The total bandwidth limit for voice and video calls.
Max Bit Rate (kbps)	The per-call bit rate limit for voice and video calls. **Note:** Bit rate is not the same as bandwidth. Since the bit rate applies in both directions and there is overhead, the actual bandwidth consumed is about 2.5 times the bit rate selected.

See also:

About Site Topology on page 278
Sites on page 279
Add Subnet Dialog Box on page 289
Site Topology Configuration Procedures on page 299

Edit Site Dialog Box

Lets you edit a site in the Polycom RealPresence DMA system's site topology and add or edit a subnet associated with the site. The following table describes the fields in the dialog box.

Field	Description
General Info	
General Settings	
Site name	A meaningful name for the site (up to 128 characters). **Note:** If the system's embedded DNS service is enabled (see Embedded DNS on page 274), the system uses the site name to create the **Logical host name** (see Site Information Dialog Box on page 281). We strongly recommend: • Using site names that contain only characters permitted in a host name (letters, numbers, and internal hyphens). • Entering network/DNS-related information in all lower case to avoid possible case-sensitivity issues with various devices and ensure interoperability.
Description	A brief description of the site (up to 200 characters).
Bandwidth Settings	
Max bandwidth (Mbps)	The total bandwidth limit for voice and video calls. If not selected, voice and video calls can use all of the available bandwidth. This setting lets you restrict voice and video calls to only a portion of the available bandwidth, ensuring that some bandwidth always remains available for other network traffic.
Max bit rate (kbps)	The per-call bit rate limit for voice and video calls. **Note:** Bit rate is not the same as bandwidth. Since the bit rate applies in both directions and there is overhead, the actual bandwidth consumed is about 2.5 times the bit rate selected. When you specify both the bandwidth and bit rate limits, the dialog box shows you how many calls at that bit rate the specified bandwidth limit supports.
Territory Settings	
Territory	Assigns the site to a territory, and thus to a Polycom RealPresence DMA cluster.

Field	Description
ISDN Number Assignment	
Assignment method	The ISDN number assignment method for the devices in this site. The numbers being assigned are endpoint aliases in the form of E.164 numbers, which can be dialed by both IP endpoints registered to the Call Server and ISDN endpoints dialing in through an ISDN gateway. The assignment options are: • **No assignment**. Select this option when you don't want to define a range of E.164 aliases for the site. • **Manual assignment**. Select this option to define a range (or ranges) of E.164 aliases for the site, but not automatically assign those aliases to endpoints. • **Automatic assignment**. Select this option to define a range (or ranges) of E.164 aliases for the site and automatically assign those aliases to endpoints that register without an alias. After an E.164 alias is assigned to an endpoint, it's reserved for use as long as that endpoint remains registered with the Polycom RealPresence DMA system. If you decide not to enable **Automatic assignment**, you can always manually add E.164 aliases to endpoints from the **Endpoints** page (see Edit Device Dialog Box on page 97). And endpoints will have any aliases with which they register.
Dialing method	The ISDN inward dialing method for the site: • **DID (Direct Inward Dial)**. Select this option if your ISDN gateway is provisioned with a range of phone numbers from the ISDN service provider, and each of these numbers will be assigned to an endpoint as an alias. • **Gateway Extension Dialing**. Select this option if your ISDN gateway's ISDN connection is provisioned with a single gateway phone number from the ISDN service provider, and endpoints will be assigned an extension (E.164 alias) that's internal to the company and doesn't correspond to any number that can be dialed on the PSTN. Endpoints can be dialed from the PSTN by dialing the ISDN gateway phone number, followed by a delimiter (usually a #) and the extension number. The gateway receives the full number from the PSTN and dials only the extension number on the IP network.
ISDN Outbound Dialing	
Override ITU dialing rules	Check this box to override the standard dialing rules, established by the International Telecommunications Union, when dialing out using an ISDN gateway. The default setting, which does not override ITU dialing rules, is usually accurate for placing outbound calls. Enable this setting if you find that ISDN gateway calls from registered endpoints in this site are unsuccessful.
PBX access code	The code needed to access the ISDN/PSTN network through the site's PBX when dialing out.

Field	Description
Country code	The country code for the site's location. Click the CC button to select from a list of countries. To apply ITU dialing rules, the system must compare the country code of the gateway site with the country code of the call's destination.
Area code	The city or area code for the site's location. Leading zeroes are optional. For example, the city code for Paris is 01, but you can enter either 01 or 1 in this field. To apply ITU dialing rules, the system must compare the area code of the gateway site with the area code of the call's destination.
Always dial area code	Specifies that the area code should always be included in the phone number.
Always dial national prefix	Specifies that the national prefix should always be included in the phone number.
Length of subscriber number	The number of digits in a phone number. For example, in the United States and other areas using the North American Numbering Plan (NANP), subscriber numbers have seven digits.
ISDN Range Assignment (for DID dialing method)	
Length of call line identifier	The number of digits in the Call Line Identifier (CLID), which is the dialed number. The maximum is 17. For example, in the United States, the number of digits in the CLID is often 7 for outside local calls and 11 for callers in a different area code.
Length of short phone number	The number of digits in the short form of the dialing number. For example, in the United States, internal extensions are usually four or five digits.
ISDN Number Ranges	The number ranges available for assignment to endpoints in the site. Click **Add** to add a new range of numbers. Click **Edit** or **Delete** to change or delete the selected range. The start and end numbers in the range should be entered with the same number of digits. If the range is 303-223-1000 to 1999, enter 3032231000 and 3032231999.
ISDN Range Assignment (for gateway extension dialing method)	
ISDN gateway number	An ISDN gateway phone number for the site. This field is just for your reference. It's not used by the software to process calls. If the site has more than one ISDN gateway, you'll need to know their access numbers and determine how to instruct inbound users to call.
E.164 start	The beginning of the range of E.164 extensions associated with the site.
E.164 end	The end of the range of E.164 extensions associated with the site. The start and end numbers in the range should be entered with the same number of digits.
H.323 Routing	
Internet calls are not allowed	Disables H.323 calls to the internet.

Field	Description
Allowed via H.323-aware firewall	Allows H.323 calls to the internet through a firewall.
Allowed via H.323-aware SBC or ALG	Enables H.323 calls to the internet through the specified session border controller (SBC) or application layer gateway (ALG).
Call signaling address (IPv4)	The call signaling address for the H.323 SBC or ALG.
Port	The call signaling port for the H.323 SBC or ALG.
SIP Routing	
Internet calls are not allowed	Disables SIP calls to the internet.
Allowed via SIP-aware firewall	Enables calls to the internet through a firewall.
Allowed via SIP-aware SBC or ALG	Enables SIP calls to the internet through the specified session border controller (SBC) or application layer gateway (ALG).
Call signaling address (IPv4)	The call signaling address for the SBC or ALG.
Port	The call signaling port for the SBC or ALG.
Subnets	Lists the subnets in the site. Click **Add** to add a subnet. Select a subnet in the table and click **Edit** or **Delete** to modify or remove it.
Subnet Name	The unique name of the subnet.
IP Address	The IP address of the subnet.
Subnet Mask Length	The CIDR (Classless Inter-Domain Routing) prefix size value (the number of leading 1 bits in the routing prefix mask). This value, together with the **IP Address**, defines the subnet. For IPv4, a value of 24 is equivalent to specifying a dotted-quad subnet mask of 255.255.255.0. A value of 16 is equivalent to specifying a subnet mask of 255.255.0.0.
Max Bandwidth (Mbps)	The total bandwidth limit for voice and video calls.
Max Bit Rate (kbps)	The per-call bit rate limit for voice and video calls. **Note:** Bit rate is not the same as bandwidth. Since the bit rate applies in both directions and there is overhead, the actual bandwidth consumed is about 2.5 times the bit rate selected.

See also:

About Site Topology on page 278

Sites on page 279

Add Subnet Dialog Box on page 289

Edit Subnet Dialog Box on page 290

Site Topology Configuration Procedures on page 299

Add Subnet Dialog Box

Lets you add subnets to the site you're adding or editing.

Note: Subnets and Sites
You can assign a subnet to only one site.

The following table describes the fields in the dialog box.

Field	Description
Name	The name of the subnet. Required and must be unique.
IP address	The IP address of the subnet.
Subnet mask length	The CIDR (Classless Inter-Domain Routing) prefix size value (the number of leading 1 bits in the routing prefix mask). This value, together with the **IP Address**, defines the subnet. For IPv4, a value of 24 is equivalent to specifying a dotted-quad subnet mask of 255.255.255.0. A value of 16 is equivalent to specifying a dotted-quad subnet mask of 255.255.0.0.
Max bandwidth (Mbps)	The total bandwidth limit for voice and video calls. If not specified, the site limit applies.
Max bit rate (kbps)	The per-call bit rate limit for voice and video calls. If not specified, the site limit applies. **Note:** Bit rate is not the same as bandwidth. Since the bit rate applies in both directions and there is overhead, the actual bandwidth consumed is about 2.5 times the bit rate selected. When you specify both the bandwidth and bit rate limits, the dialog box shows you how many calls at that bit rate the specified bandwidth supports.

See also:

Add Site Dialog Box on page 282
Edit Site Dialog Box on page 285
Site Topology Configuration Procedures on page 299

Edit Subnet Dialog Box

Lets you edit a subnet associated with a site.

Note: Subnets and Sites
You can assign a subnet to only one site.

The following table describes the fields in the dialog box.

Field	Description
Name	The name of the subnet. Required and must be unique.
IP address	The IP address of the subnet.

Field	Description
Subnet mask length	The CIDR (Classless Inter-Domain Routing) prefix size value (the number of leading 1 bits in the routing prefix mask). This value, together with the **IP Address**, defines the subnet. For IPv4, a value of 24 is equivalent to specifying a dotted-quad subnet mask of 255.255.255.0. A value of 16 is equivalent to specifying a subnet mask of 255.255.0.0.
Max bandwidth (Mbps)	The total bandwidth limit for voice and video calls. If not specified, the site limit applies.
Max bit rate (kbps)	The per-call bit rate limit for voice and video calls. If not specified, the site limit applies. **Note:** Bit rate is not the same as bandwidth. Since the bit rate applies in both directions and there is overhead, the actual bandwidth consumed is about 2.5 times the bit rate selected. When you specify both the bandwidth and bit rate limits, the dialog box shows you how many calls at that bit rate the specified bandwidth supports.

See also:

Add Site Dialog Box on page 282

Edit Site Dialog Box on page 285

Site Topology Configuration Procedures on page 299

Site Links

The **Site Links** page contains a list of the links defined in the site topology. A link can connect two sites, or it can connect a site to an MPLS network cloud (see Network Clouds on page 297). Links between sites must be configured in order to enable calls between sites. In order for an endpoint in site A to call an endpoint in site B, there must be a link path (either direct, via other linked sites, or via an MPLS network cloud) connecting site A and site B.

If the system is integrated with a Polycom RealPresence Resource Manager or CMA system, it receives this information from that system, and this page is read-only. If not, you can enter link information.

The commands in the **Actions** list let you add a link and edit or delete existing links.

The following table describes the fields in the list.

Column	Description
Name	Name of the link.
Description	Description of the link.
From Site	The originating site of the link. Can’t be changed when creating a site-to-cloud link.
To Site	The destination site (or MPLS cloud) of the link. Can’t be changed when creating a site-to-cloud link.

Column	Description
Max Total Bandwidth (Mbps)	The total bandwidth limit for voice and video calls, which you set at the gateway or router.
Max Per-Call Bit Rate (kbps)	The per-call bit rate limit for voice and video calls, which you set at the gateway or router.

See also:

About Site Topology on page 278
Add Site Link Dialog Box on page 292
Edit Site Link Dialog Box on page 292
Site Topology Configuration Procedures on page 299

Add Site Link Dialog Box

Lets you define a new site link in the Polycom RealPresence DMA system's site topology. A link can connect two sites, or it can connect a site to an MPLS network cloud (see Network Clouds on page 297).

The following table describes the fields in the dialog box.

Field	Description
Name	A meaningful name for the link (up to 128 characters).
Description	A brief description of the link (up to 200 characters).
From site	The originating site of the link.
To site	The destination site of the link.
Max bandwidth (Mbps)	The total bandwidth limit for voice and video calls, which you set at the gateway or router.
Max bit rate (kbps)	The per-call bit rate limit for voice and video calls, which you set at the gateway or router.

See also:

About Site Topology on page 278
Site Links on page 291
Site Topology Configuration Procedures on page 299

Edit Site Link Dialog Box

Lets you edit a site link in the Polycom RealPresence DMA system's site topology. A link can connect two sites, or it can connect a site to an MPLS network cloud (see Network Clouds on page 297).

You can't change the sites that a site link connects. To modify how sites are linked, delete the links to be removed and add the new links.

The following table describes the fields in the dialog box.

Field	Description
Name	A meaningful name for the link (up to 128 characters).
Description	A brief description of the link (up to 200 characters).
From site	The originating site of the link (view only).
To site	The destination site of the link (view only).
Max bandwidth (Mbps)	The total bandwidth limit for voice and video calls, which you set at the gateway or router.
Max bit rate (kbps)	The per-call bit rate limit for voice and video calls, which you set at the gateway or router.

See also:

About Site Topology on page 278
Site Links on page 291
Site Topology Configuration Procedures on page 299

Site-to-Site Exclusions

The **Site-to-Site Exclusions** page contains a list of the site-to-site connections that the site topology doesn't permit a call or session to use.

If the system is integrated with a Polycom RealPresence Resource Manager or CMA system, it receives this information from that system, and this page is read-only. If not, you can define exclusions.

The commands in the **Actions** list let you add a site-to-site exclusion and delete existing exclusions.

The following table describes the fields in the list.

Column	Description
From Site	Name of one of the two sites connected by the excluded link.
To Site	Name of the other site.

See also:

About Site Topology on page 278
Add Site-to-Site Exclusion Wizard on page 293
Site Topology Configuration Procedures on page 299

Add Site-to-Site Exclusion Wizard

Lets you define a new site-to-site exclusion in the Polycom RealPresence DMA system's site topology.

To add a site-to-site exclusion

1 Go to **Network > Site Topology > Site-to-Site Exclusions**.

2 In the **Actions** list, click **Add**.
3 In Step 1 of the wizard, select the first site for the exclusion. Click **Next**.
   If the site you want isn't displayed in the list, you can search by site name or territory.
4 In Step 2 of the wizard, select the second site for the exclusion. Click **Next**.
5 In Step 3 of the wizard, review the exclusion and click **Done** if it's correct.

See also:

Site-to-Site Exclusions on page 293
Site Topology Configuration Procedures on page 299

Territories

The **Territories** page lists the territories defined in the site topology. On the right, it displays information about the selected territory.

A territory contains one or more sites for which a Polycom RealPresence DMA cluster is responsible. By default, there is one territory named Default RealPresence DMA Territory.

In a superclustered Polycom RealPresence DMA system deployment, additional territories allow you to assign different territories to different Polycom RealPresence DMA clusters and to specify a backup cluster for each territory to increase fault tolerance. If a territory's primary cluster becomes unavailable for any reason, the backup cluster takes over the responsibilities for the territory.

Territories serve the following purposes:

- Sites are associated with territories, thus specifying which Polycom RealPresence DMA cluster is responsible for serving as the H.323 gatekeeper, SIP registrar, and SIP proxy for each site.
- Microsoft Active Directory integration is associated with a territory, thus specifying which Polycom RealPresence DMA cluster is responsible for connecting to the directory server, retrieving user and group data, and updating the shared supercluster data.
- Microsoft Exchange server integration (for calendaring service) is associated with a territory, thus specifying which Polycom RealPresence DMA cluster is responsible for integrating with the Exchange server and monitoring the Polycom Conferencing infrastructure mailbox.
- The Polycom RealPresence DMA system's Conference Manager functionality is associated with territories, thus specifying which Polycom RealPresence DMA clusters are responsible for hosting conference rooms (VMRs). Up to three territories (and thus clusters) may have this responsibility.

If the system is integrated with a Polycom RealPresence Resource Manager or CMA system, it receives territory information from that system, and the **Territories** page is view-only. If not, you can modify the territory information.

The commands in the **Actions** list let you add a territory and edit or delete territories, or if the system is integrated with a Polycom RealPresence Resource Manager or CMA system, view details for a territory.

The following table describes the fields in the list and the sections on the right.

Column/Section	Description
Name	Name of the territory.
Description	Description of the territory.

Column/Section	Description
Primary Cluster	The primary Polycom RealPresence DMA cluster responsible for this territory.
Backup Cluster	The backup Polycom RealPresence DMA cluster, if any, responsible for this territory. You must have a supercluster consisting of at least two Polycom RealPresence DMA clusters in order to specify a backup.
Host Conference Rooms	Indicates whether this territory is used for hosting conference rooms (VMRs, or virtual meeting rooms).
Territory Summary pane	Repeats the name and description of the selected territory.
Associated Sites pane	List the sites included in the selected territory.

See also:

About Site Topology on page 278
Add Territory Dialog Box on page 295
Edit Territory Dialog Box on page 296
Site Topology Configuration Procedures on page 299

Add Territory Dialog Box

Lets you define a new territory in the Polycom RealPresence DMA system's site topology.

The following table describes the fields in the dialog box.

Field	Description
Territory Info	
Name	A meaningful name for the territory (up to 128 characters).
Description	A brief description of the territory (up to 200 characters).
Primary cluster	The primary Polycom RealPresence DMA cluster responsible for this territory.
Backup cluster	The backup Polycom RealPresence DMA cluster, if any, responsible for this territory. You must have a supercluster consisting of at least two Polycom RealPresence DMA clusters in order to specify a backup.
Host conference rooms in this territory	Enables this territory to be used for hosting conference rooms (VMRs, or virtual meeting rooms). The territory's primary and backup clusters must both be enabled for conference room hosting. No more than three territories may have this capability enabled.
Associated Sites	
Search sites	Enter search string or leave blank to find all sites.

Field	Description
Available sites	Lists sites found and shows the territory, if any, to which each currently belongs. Selecting a site and moving it to the **Associated sites** list changes its territory assignment to this territory.
Associated sites	Lists sites linked to this territory. Changes you make to this list aren't implemented until you click **OK**.

See also:

About Site Topology on page 278

Territories on page 294

Site Topology Configuration Procedures on page 299

Edit Territory Dialog Box

Lets you edit a territory in the Polycom RealPresence DMA system's site topology.

The following table describes the fields in the dialog box.

Field	Description
Territory Info	
Name	A meaningful name for the territory (up to 128 characters).
Description	A brief description of the territory (up to 200 characters).
Primary cluster	The primary Polycom RealPresence DMA cluster responsible for this territory.
Backup cluster	The backup Polycom RealPresence DMA cluster, if any, responsible for this territory. You must have a supercluster consisting of at least two Polycom RealPresence DMA clusters in order to specify a backup.
Host conference rooms in this territory	Enables this territory to be used for hosting conference rooms (VMRs, or virtual meeting rooms). The territory's primary and backup clusters must both be enabled for conference room hosting. No more than three territories may have this capability enabled.
Associated Sites	
Search sites	Enter search string or leave blank to find all sites.
Available sites	Lists sites found and shows the territory, if any, to which each currently belongs. Selecting a site and moving it to the **Associated sites** list changes its territory assignment to this territory.
Associated sites	Lists sites linked to this territory. Changes you make to this list aren't implemented until you click **OK**.

See also:

About Site Topology on page 278
Territories on page 294
Site Topology Configuration Procedures on page 299

Network Clouds

The **Network Clouds** page contains a list of the MPLS (Multiprotocol Label Switching) network clouds defined in the site topology.

Note: Network Clouds vs. the Internet/VPN Site
Don't confuse this with the Internet/VPN site. MPLS is a special technology typically offered via a private WAN environment, providing more reliability than the Internet. If your enterprise has an MPLS network cloud, you or your IT staff know about it.

If the Polycom RealPresence DMA system is integrated with a Polycom RealPresence Resource Manager or CMA system, it receives MPLS network information from that system, and this page is read-only. If not, you can enter MPLS network cloud information.

The commands in the **Actions** list let you add an MPLS cloud and edit or delete existing MPLS clouds.

The following table describes the fields in the list.

Column/Section	Description
Name	Name of the cloud.
Description	Description of the cloud.

See also:

About Site Topology on page 278
Add Network Cloud Dialog Box on page 297
Edit Network Cloud Dialog Box on page 298
Site Topology Configuration Procedures on page 299

Add Network Cloud Dialog Box

Lets you define a new MPLS network cloud in the Polycom RealPresence DMA system's site topology. The following table describes the fields in the dialog box.

Field	Description
Cloud Info	
Name	A meaningful name for the cloud (up to 128 characters).
Description	A brief description of the cloud (up to 200 characters).

Field	Description
Associated Sites	
Search Sites	Enter search string or leave blank to find all sites.
Search Result	Lists sites found and shows the territory, if any, to which each belongs. Select a site and click the right arrow to open the **Add Site Link** dialog box (see Add Site Link Dialog Box on page 292).
Associated Sites	Lists sites linked to the cloud and shows the territory, if any, to which each belongs.

See also:

About Site Topology on page 278
Network Clouds on page 297
Site Topology Configuration Procedures on page 299

Edit Network Cloud Dialog Box

Lets you edit an MPLS network cloud in the Polycom RealPresence DMA system's site topology. The following table describes the fields in the dialog box.

Field	Description
Cloud Info	
Name	A meaningful name for the cloud (up to 128 characters).
Description	A brief description of the cloud (up to 200 characters).
Associated Sites	
Search Sites	Enter search string or leave blank to find all sites.
Search Result	Lists sites found and shows the territory, if any, to which each belongs. Select a site and click the right arrow to open the **Add Site Link** dialog box (see Add Site Link Dialog Box on page 292).
Associated Sites	Lists sites linked to the cloud and shows the territory, if any, to which each belongs.

See also:

About Site Topology on page 278
Network Clouds on page 297

Site Topology Configuration Procedures

To configure your site topology in the RealPresence DMA system

1. Go to **Network > Site Topology > Sites**.

   Initially, the list of sites contains only an entry named Internet/VPN, which can't be edited.
2. For each site in your network topology, do the following:
   a. In the **Actions** list, click **Add**.
   b. In the **Add Site** dialog box, complete the **General Info** section. See Add Site Dialog Box on page 282.
   c. To enable IP calls to/from the site, complete the **ISDN Number Assignment**, **H.323 Routing** and/or **SIP Routing** sections.
   d. In the **Subnets** section, specify the subnet or subnets that make up the site. See Add Subnet Dialog Box on page 289.
   e. Click **OK**.
3. Go to **Network > Site Topology > Territories**.

   The list of territories contains an entry named Default RealPresence DMA Territory. It's assigned to this Polycom RealPresence DMA system cluster. You can edit this entry, including changing its name and assigning sites to it.
4. Edit the Default RealPresence DMA Territory entry:
   a. Select the entry and, in the **Actions** list, click **Edit**.

      The **Edit Territory** dialog box appears.
   b. In the **Territory Info** section, change the name and description for this territory if desired. Assign a primary and backup cluster for the territory, and elect whether to host conference rooms in this territory (the primary and backup cluster must be licensed for this capability).
   c. In the **Associated Sites** section, add all the sites to the territory. See Edit Territory Dialog Box on page 296.
   d. Click **OK**.
5. Add other territories by clicking **Add** in the **Actions** list and completing the same settings in the **Add Territory** dialog box.
6. Go to **Network > Site Topology > Site Links**, and for each direct link between sites, do the following:
   a. In the **Actions** list, click **Add**.
   b. In the **Add Site Link** dialog box, define the link. See Add Site Link Dialog Box on page 292.
   c. Click **OK**.
7. Go to **Network > Site Topology > Network Clouds**, and for each MPLS network cloud in your network topology, do the following:
   a. In the **Actions** list, click **Add**.

      The **Add Network Cloud** dialog box appears.
   b. In the **Cloud Info** section, enter a name and description for the cloud.
   c. In the **Linked Sites** section, display the sites you defined. See Add Network Cloud Dialog Box on page 297.

d Select the first site linked to this cloud and click the arrow button to move it to the Linked Sites list.

The **Add Site Link** dialog box appears.

e Define the link. See Add Site Link Dialog Box on page 292.

f Repeat the previous two steps for each additional site linked to this cloud.

g Click **OK**.

8 Go to **Network > Site Topology > Site-to-Site Exclusions**, and for each exclusion in your network topology, do the following:

a In the **Actions** list, click **Add**.

b Complete the **Add Site-to-Site Exclusions** wizard. See Add Site-to-Site Exclusion Wizard on page 293.

Your site topology information is complete. For a conference with cascading for bandwidth enabled, the Polycom RealPresence DMA system can use it to route calls to the nearest eligible MCU (based on pools and pool orders) that has available capacity and to create the cascade links between MCUs.

Note: Resource Management System Integration Replaces Data

If in the future you integrate this system with a Polycom RealPresence Resource Manager or CMA system, the site topology information from the Polycom RealPresence Resource Manager or CMA system will replace the information you entered.

See also:

About Site Topology on page 278

Users and Groups

This chapter describes the following Polycom® RealPresence® Distributed Media Application™ (DMA®) 7000 system management topics related to users and groups:

- User Roles Overview
- Adding Users Overview
- Users
- Groups
- Login Sessions
- Change Password Dialog Box

User Roles Overview

The Polycom RealPresence DMA system has four user roles, or classes of users, each with its own set of permissions. Every user account has one or more user roles (but only three of the four roles must be explicitly assigned).

The following table briefly describes the user roles. See Polycom RealPresence DMA System User Roles and Their Access Privileges on page 24 for detailed information on which commands are available to each user role.

Role	Description
Administrator	Responsible for the overall administration of the system. Can access all the pages except those reserved for auditors (must be an enterprise user to see enterprise reports, enterprise users, and groups). If you have a Polycom RealPresence Resource Manager system, assign this role to its login account. If API access for other clients is enabled, assign this role to the login account of any other API client that should have administrative rights and responsibilities. This role must be explicitly assigned by an Administrator.
Auditor	Responsible for configuring logging and history record retention, and for managing logs. Can access all history reports. This role must be explicitly assigned by an Administrator.

Role	Description
Provisioner	Responsible for the management of Conferencing User accounts. Can create or modify only users with no role other than Conferencing User, but can view all local users. Must be an enterprise user to view all enterprise users. Can view history reports. If you have a Polycom RealPresence Resource Manager system or any other API client, assign this role to its users who should have provisioning rights and responsibilities. This role must be explicitly assigned by an Administrator.
Conferencing User	Has been provisioned with a conference room (virtual meeting room, or VMR) or rooms and can host conferences. Cannot access the system management interface. This role is automatically present on all user accounts. It isn't listed under **Available Roles** or explicitly assigned. For purposes of API access, the system identifies a subcategory of Conferencing User, the Conference Room Owner, who can monitor and control his or her conferences. **Note:** A user account that has neither a conference room nor an explicitly assigned role serves no purpose.

If your system is integrated with an Active Directory, all enterprise users are automatically Conferencing Users. You can use enterprise groups to manage assignment of the other user roles. See Enterprise Groups Procedures on page 329.

Note: Enterprise vs. Local Users
You must be an enterprise user (with the appropriate user role assignments) to see and work with enterprise users. A local user can only see other local users, regardless of user roles.

See also:

Users on page 303

Users Procedures on page 321

Conference Rooms Procedures on page 323

Adding Users Overview

You can add users to the system in two ways:

- Add users manually to the Polycom RealPresence DMA system. These are known as *local* users. When adding users manually, you must assign them conference rooms and any specific roles they should have.
- Integrate the Polycom RealPresence DMA system with Microsoft Active Directory (requires Administrator permissions). This integration allows users with specific roles (Administrator, Auditor, or Provisioner) to log into the Polycom RealPresence DMA system with their Active Directory (AD) user names and passwords. The integration process can also automatically create conference rooms for AD users based on the AD field (such as phone number) that you specify.

  When a Polycom RealPresence DMA system is integrated with an Active Directory, the Active Directory users are automatically added as Polycom RealPresence DMA system users with a Conferencing User role and displayed in the Polycom RealPresence DMA system **Users** list. An administrator can assign them additional roles as required.

Note: Enterprise vs. Local Users

You must be an enterprise user (with the appropriate user role assignments) to see and work with enterprise users. A local user can only see other local users, regardless of user roles.

A newly installed system has a single local user account, admin. We strongly recommend that, as part of initial system setup, you create a local user account for yourself with the Administrator role, log in using that account, and delete the admin user account. See the caution and first procedure in Users Procedures on page 321.

You can then create other local user accounts or integrate with an Active Directory and assign additional roles to the appropriate enterprise users.

Integration with an Active Directory is described in Microsoft Active Directory® Integration on page 152.

If you have a Polycom RealPresence Resource Manager that you want to integrate with the Polycom RealPresence DMA system, you must create a local user account for the RealPresence Resource Manager system, which enables it to log into the RealPresence DMA system's RealPresence Platform API. This account should have administrator and provisioner roles.

The RealPresence Resource Manager user owns the conference rooms (VMRs) it creates for preset dial-out conferences (called *Anytime* conferences in the RealPresence Resource Manager system).

See also:

Polycom® RealPresence DMA® System Initial Configuration Summary on page 29

User Roles Overview on page 301

Users Procedures on page 321

Conference Rooms Procedures on page 323

Users

The **Users** page provides access to information about both local and enterprise users. From it, you can:

- Add local users.
- Edit both local and enterprise users (for the latter, only roles and conference passcodes can be modified).
- Manage conference rooms (virtual meeting rooms, or VMRs) for both local and enterprise users.

Caution: Beware of API Client Capabilities

If you have a Polycom RealPresence Resource Manager system (or another API client) that connects to the RealPresence DMA system's RealPresence Platform API, be aware that authorized users of that system (or other API client) can add local users, edit passcodes, add and edit conference rooms (VMRs), and view information about users and conference rooms. (Ordinary Conferencing Users can only access their own user information and the conference rooms they own.)

In particular, the RealPresence Resource Manager system itself has a user login (see Adding Users Overview on page 302), and it owns the conference rooms created in its scheduling interface for preset dial-out conferences (referred to as *Anytime* conferences in the RealPresence Resource Manager system).

The search pane above the list lets you find users matching the criteria you specify. Click the down arrow on the right to expand the search pane, providing access to more search fields and filters.

The system matches any string you enter against the beginning of the value for which you're searching. For the **Search users** field at the top, it matches against user ID, first name, and last name. For instance, if you enter "sa" in the **Search users** field, it displays the users whose user ID, first name, or last name begins with "sa."

To search for a string not at the beginning of the field, you can use an asterisk (*) as a wildcard. You can restrict the search to local users by selecting the check box.

The users that match your search criteria (up to 500) are listed below. If there are more than 500 results, you can scroll between groups of results using the pagination buttons, found below the list of results at the lower left of the window.

The following table describes the parts of the **Users** list.

Column	Description
User ID	The user's login name. The icon to the left indicates whether the user's account is enabled or disabled. Hover over it to see the associated message.
First Name	The user's first name.
Last Name	The user's last name.
Domain	The domain associated with the user. All users added manually to the system are in the LOCAL domain.
Class of Service	The class of service assigned to the user, which determines the priority of the user's calls. **Note:** When a device calls a conference room (VMR), the class of service of the conference room applies to the call, not the class of service of the user or device.
Conference Rooms	The user's conference room or rooms (virtual meeting rooms, or VMRs). If the system is integrated with an Active Directory, and you specified criteria for conference room ID generation, the enterprise users have a default conference room assigned to them automatically. Alternatively or in addition, enterprise users may have custom conference rooms manually assigned to them. Local users must be manually assigned a conference room or rooms. **Note:** A user account that has neither a conference room nor an explicitly assigned role serves no purpose.
Roles	The user's explicitly assigned user roles. All users automatically have the Conferencing User role; it's not listed or explicitly assigned (but a conference room ID is required). See User Roles Overview on page 301.

Column	Description
Associated Endpoints	The endpoints associated with the user, if any.
Passcodes	The numeric passcodes specified for this user, if any: • Chairperson passcode — Passcode that identifies chairpersons in the user's conferences. • Conference passcode — Passcode that callers must enter to join the user's conferences. For enterprise users, passcodes (both kinds) generally come from the Active Directory. See Adding Passcodes for Enterprise Users on page 162. But you can specify an enterprise user's passcodes locally. See Edit User Dialog Box on page 307. For local users, you can add passcodes when you create or edit the users. See Add User Dialog Box on page 305. Whether passcodes are specified for the user or not, you can add or change them for a specific conference room of the user's. See Edit Conference Room Dialog Box on page 317.

See also:

User Roles Overview on page 301

Adding Users Overview on page 302

Add User Dialog Box on page 305

Edit User Dialog Box on page 307

Conference Rooms Dialog Box on page 310

Users Procedures on page 321

Conference Rooms Procedures on page 323

Add User Dialog Box

The following table describes the parts of the **Add User** dialog box, which lets you add local users to the system.

Field	Description
General Info	
First name	The local user's first name.
Last name	The local user's last name.
User ID	The local user's login name.
Password Confirm password	The local user's system login password (not conference or chairperson passcode). This is the password that enables users with explicitly assigned roles to log into the system management interface (see User Roles Overview on page 301). The password must satisfy the local password rules specified for the system (see Local Password on page 58).

Field	Description
User pass-through to CDR	Optional value to put in the `userDataA` field of call CDRs associated with this user. For instance, this might be a user ID from some external system or database.
Account disabled	If checked, the user can't host conferences (the user's conference room or rooms are not available) and can't access the system management interface.
Conference room territory	The territory to which the user's conference rooms (virtual meeting rooms, or VMRs) are assigned. A conference room's territory assignment determines which RealPresence DMA cluster hosts its conferences (the primary cluster for the territory, or its backup cluster if necessary). If not selected, the user's conference rooms are assigned as follows (in priority order listed): • To the territory associated with the room specifically (see Conference Rooms Dialog Box on page 310). • Otherwise, to the territory associated with the AD group the user belongs to (if more than one, the lexically first group) (see Edit Group Dialog Box on page 327). • Otherwise, the system's default territory (see Conference Settings on page 185).
Class of service	Select to assign the user a class of service, which determines the priority of the user's calls. If not selected, the user receives the highest class of service associated with any group to which the user belongs, or if none, the system's default class of service. See Conference Settings on page 185. **Note:** A class of service may also be assigned to an endpoint. See Endpoints on page 91. **Note:** When a device calls a conference room (VMR), the class of service of the conference room applies to the call, not the class of service of the user or device.
Maximum bit rate (kbps)	If **Class of service** is selected, lets you specify the maximum bit rate for the user.
Minimum downspeed rate (kbps)	If **Class of service** is selected, lets you specify the minimum bit rate to which the user's calls can be reduced (downspeeded).
Associated Endpoints	
Associated endpoints	Lists the endpoints associated with the user. Click **Select** to open the **Select Associated Endpoints** dialog box and associate an endpoint with the user (see Select Associated Endpoints Dialog Box on page 310). Click **Delete** to delete an associated endpoint. A dialog box prompts you to confirm. **Note:** You can also manage endpoint associations on the **Endpoints** page (see Associate User Dialog Box on page 99). But if the Polycom RealPresence DMA system is integrated with a Polycom RealPresence Resource Manager or CMA system, it receives user-to-device association information from that system, and you can only associate users with devices on the Polycom RealPresence Resource Manager or CMA system.

Field	Description
Associated Roles	
Available roles	Lists the roles available for assignment to the user. All users automatically have the Conferencing User role; it's not listed or explicitly assigned (but a conference room ID is required). See User Roles Overview on page 301.
Selected roles	Lists the roles selected for assignment to the user.
Conference Passcodes	
Chairperson passcode	The numeric passcode that identifies chairpersons in the user's conferences. If none, the user's conferences don't include the chairperson feature. Must contain numeric characters only (the digits 0-9) and may be up to 16 digits long. Can't be the same as the conference passcode. The passcode can also be set individually for each of the user's conference rooms.
Conference passcode	The numeric passcode that callers must enter to join the user's conferences. If none, the user's conferences don't require a passcode. Must contain numeric characters only (the digits 0-9) and may be up to 16 digits long. Can't be the same as the chairperson passcode. The passcode can also be set individually for each of the user's conference rooms.

Note: Cisco MCUs and Passcodes
If Cisco Codian MCUs are included in the Polycom RealPresence DMA system's pool of conferencing resources, don't assign a chairperson passcode without also assigning a conference passcode. If a conference with only one passcode (either chairperson or conference) lands on a Codian MCU, all callers to the conference must enter that passcode.

See also:

Users on page 303
Select Associated Endpoints Dialog Box on page 310
Users Procedures on page 321
Conference Rooms Procedures on page 323

Edit User Dialog Box

The following table describes the parts of the **Edit User** dialog box. The **User ID** is not editable. The other **General Info** items are editable only for local (not enterprise) users.

Field	Description
General Info	
First name	The user's first name.
Last name	The user's last name.

Field	Description
User ID	The user's login name.
Password Confirm password	The user's system login password (not conference or chairperson passcode). This is the password that enables users with explicitly assigned roles to log into the system management interface (see User Roles Overview on page 301). The password must satisfy the local password rules specified for the system (see Local Password on page 58). If the system is in maximum security mode, changing a user's password requires you to authenticate yourself by entering your password when prompted (see Authentication Required Dialog Box on page 310).
User pass-through to CDR	Optional value to put in the `userDataA` field of call CDRs associated with this user. For instance, this might be a user ID from some external system or database.
Account disabled	If checked, the user can't use the system's ad hoc conferencing features (the user's conference room or rooms are not available) and can't access the system management interface.
Account locked	If checked, the system has locked the user's account due to failed login attempts. An administrator can unlock the account by clearing the check box, but can't lock it.
Conference room territory	The territory to which the user's conference rooms (virtual meeting rooms, or VMRs) are assigned. A conference room's territory assignment determines which RealPresence DMA cluster hosts its conferences (the primary cluster for the territory, or its backup cluster if necessary). If not selected, the user's conference rooms are assigned as follows (in priority order listed): • To the territory associated with the room specifically (see Conference Rooms Dialog Box on page 310). • Otherwise, to the territory associated with the AD group the user belongs to (if more than one, the lexically first group) (see Edit Group Dialog Box on page 327). • Otherwise, the system's default territory (see Conference Settings on page 185).
Class of service	Select to assign the user a class of service, which determines the priority of the user's calls. If not selected, the user receives the highest class of service associated with any group to which the user belongs, or if none, the system's default class of service. See Conference Settings on page 185. **Note:** A class of service may also be assigned to an endpoint. See Endpoints on page 91. **Note:** When a device calls a conference room (VMR), the class of service of the conference room applies to the call, not the class of service of the user or device.
Maximum bit rate (kbps)	If **Class of service** is selected, lets you specify the maximum bit rate for the user.

Field	Description
Minimum downspeed rate (kbps)	If **Class of service** is selected, lets you specify the minimum bit rate to which the user's calls can be reduced (downspeeded).
Associated Endpoints	
Associated endpoints	Lists the endpoints associated with the user. Click **Select** to open the **Select Associated Endpoints** dialog box and associate an endpoint with the user (see Select Associated Endpoints Dialog Box on page 310). Click **Delete** to delete an associated endpoint. A dialog box prompts you to confirm. **Note:** You can also manage endpoint associations on the **Endpoints** page (see Associate User Dialog Box on page 99). But if the Polycom RealPresence DMA system is integrated with a Polycom RealPresence Resource Manager or CMA system, it receives user-to-device association information from that system, and you can only associate users with devices on the Polycom RealPresence Resource Manager or CMA system.
Associated Roles	
Available roles	Lists the roles available for assignment to the user. All users automatically have the Conferencing User role; it's not listed or explicitly assigned (but a conference room ID is required). See User Roles Overview on page 301.
Selected roles	Lists the roles selected for assignment to the user.
Conference Passcodes	
Chairperson passcode	The numeric passcode that identifies chairpersons in the user's conferences. If none, the user's conferences don't include the chairperson feature. Must contain numeric characters only (the digits 0-9) and may be up to 16 digits long. Can't be the same as the conference passcode. The passcode can also be set individually for each of the user's conference rooms.
Conference passcode	The numeric passcode that callers must enter to join the user's conferences. If none, the user's conferences don't require a passcode. Must contain numeric characters only (the digits 0-9) and may be up to 16 digits long. Can't be the same as the chairperson passcode. The passcode can also be set individually for each of the user's conference rooms.

See also:

Note: Cisco MCUs and Passcodes
If Cisco Codian MCUs are included in the Polycom RealPresence DMA system's pool of conferencing resources, don't assign a chairperson passcode without also assigning a conference passcode. If a conference with only one passcode (either chairperson or conference) lands on a Codian MCU, all callers to the conference must enter that passcode.

Users on page 303
Select Associated Endpoints Dialog Box on page 310
Users Procedures on page 321
Conference Rooms Procedures on page 323

Authentication Required Dialog Box

In maximum security mode, changing a user's password requires you to authenticate yourself. Enter your password and click **OK**.

See also:

Edit User Dialog Box on page 307

Select Associated Endpoints Dialog Box

Note: Resource Management Integration and User-to-Device Association
If the Polycom RealPresence DMA system is integrated with a Polycom RealPresence Resource Manager or CMA system, it receives user-to-device association information from that system, and you can only associate users with devices on the Polycom RealPresence Resource Manager or CMA system.

Lets you associate an endpoint with the selected user.

Use the search fields at the top of the dialog box to find the endpoint you want to associate with this user. Select it in the table below and click **OK**. The dialog box closes and the endpoint is added to the user's **Associated endpoints** list.

Note: Managing Endpoint Associations
You can also manage endpoint associations on the **Endpoints** page (see Associate User Dialog Box on page 99).

See also:

Add User Dialog Box on page 305
Edit User Dialog Box on page 307

Conference Rooms Dialog Box

Lets you view, add, edit, and delete the selected user's conference rooms (virtual meeting rooms, or VMRs). A user may have three kinds of conference rooms:

- One enterprise conference room (if this is an enterprise user) automatically assigned to the user as part of the Active Directory integration process. You can't delete this conference room, but you can modify it.
- Custom conference rooms manually added using the **Add** command in this dialog box.
- Calendared conference rooms created automatically when the user uses the Polycom Conferencing Add-in for Microsoft Outlook to set up Polycom Conference meetings in Outlook. You can modify some of the settings for these conference rooms, but not the ones set in the meeting invitation.

Note: User Accounts Need Assigned Rooms or Roles
A user account that has neither a conference room nor an explicitly assigned role serves no purpose.

In addition, if you have a Polycom RealPresence Resource Manager system connected to the RealPresence DMA system's RealPresence Platform API, the RealPresence Resource Manager system can create conference rooms (VMRs) in the RealPresence DMA system. There are two kinds:

- Scheduled meeting conference rooms, which are short-lived (they have a start and end time). These rooms belong to the Conferencing Users who set up the meetings in the RealPresence Resource Manager system's scheduling interface.
- Preset dial-out conference rooms (called *Anytime* conferences in the RealPresence Resource Manager system), which can be used at any time by someone with the chairperson passcode to initiate a dial-out conference to a preset list of participants. These rooms belong to the user account with which the RealPresence Resource Manager logs in.

The following table describes the parts of the **Conference Rooms** dialog box.

Field	Description
Room ID	The unique ID of the room. Icons identify enterprise conference rooms and calendared meeting (Polycom Conferencing for Outlook) conference rooms.
Dial-in #	Number used to dial into conference room. Automatically set to the dialing prefix (see Conference Settings on page 185) plus room ID.
Conference Template	The template used by the conference room, which defines the conference properties (or links to the Polycom RealPresence Collaboration Server or RMX profile) used for its conferences. See Conference Templates on page 190. The template assignment can be made at the conference room level, AD group level, or system default level.
MCU Pool Order	MCU pool order used by this conference room, which is used to determine which MCU hosts a conference. See MCU Pool Orders on page 145. The pool order assignment can be made at the conference room level, AD group level, or system default level.
Territory	The territory to which the conference room is assigned. A conference room's territory assignment determines which RealPresence DMA cluster hosts the conference (the primary cluster for the territory, or its backup cluster if necessary). The assignment can be made at the conference room level, user level, AD group level, or system default level.
Max Participants	Maximum number of callers allowed to join the conference. **Automatic** means the MCU's maximum is used.

Field	Description
Initial Start Time	For a conference room created by the Polycom RealPresence DMA system for a calendared meeting (Polycom Conferencing for Outlook), the start time and date of the meeting. For a conference room created by the Polycom RealPresence Resource Manager system (via the RealPresence DMA system API) for a non-Lync scheduled meeting, the start time and date of the meeting.
Expiration Time	For a conference room created by the Polycom RealPresence Resource Manager (via the RealPresence DMA system API) for a scheduled meeting, the end time and date of the meeting.
Add	Opens the **Add Conference Room** dialog box, where you can create a new custom conference room for this user.
Edit	Opens the **Edit Conference Room** dialog box, where you can modify the selected conference room.
Delete	Deletes the selected conference room. You're prompted to confirm. You can't delete enterprise conference rooms, calendared meeting (Polycom Conferencing for Outlook) conference rooms, or scheduled conference rooms created by the Polycom RealPresence Resource Manager system via the API. You can only delete custom conference rooms added manually in the Polycom RealPresence DMA system or via the API.

See also:

Users on page 303

Add Conference Room Dialog Box on page 312

Edit Conference Room Dialog Box on page 317

Users Procedures on page 321

Conference Rooms Procedures on page 323

Add Conference Room Dialog Box

Lets you create a custom conference room for this user. For a local user, you must add at least one conference room to give the user conferencing access.

You can create additional custom conference rooms (for a local or enterprise user) in order to offer the user a different conferencing experience (template) or just an alternate (maybe simpler) room ID and dial-in number.

The following table describes the parts of the **Add Conference Room** dialog box.

Field	Description
Room ID	The unique ID of the conference room. Click **Generate** to let the system pick an available ID (from the range set in Conference Settings). If using alphanumeric conference room IDs, don't include multiple consecutive spaces or the following characters: `()&%#@|"':;,` If the ID includes any other punctuation characters, it must start with an alphanumeric character and end with an alphanumeric character.
Dial-in #	Number used to dial into conference room. Automatically set to the dialing prefix (see Conference Settings on page 185) plus room ID.
Territory	The territory to which the conference room is assigned. A conference room's territory assignment determines which RealPresence DMA cluster hosts its conferences (the primary cluster for the territory, or its backup cluster if necessary). If not selected, the conference room is assigned as follows (in priority order listed): • To the territory associated with the user (see Edit User Dialog Box on page 307). • Otherwise, to the territory associated with the AD group the user belongs to (if more than one, the lexically first group) (see Edit Group Dialog Box on page 327). • Otherwise, the system's default territory (see Conference Settings on page 185).
Conference template	The template used by the conference room, which defines the conference properties (or links to the Polycom RealPresence Collaboration Server or RMX profile) used for its conferences (see Conference Templates on page 190). If not selected, the room uses the highest-priority template associated with any group to which the user belongs, or if none, the system's default template (see Conference Settings on page 185). **Caution:** If this template is linked to a RealPresence Collaboration Server or RMX profile, the profile's IVR service determines whether callers are prompted for passcodes: • If the profile's IVR service prompts for passcodes, callers are prompted even if the conference doesn't have a passcode. • If the profile's IVR service doesn't prompt for passcodes, callers aren't prompted even if the conference has a conference or chairperson passcode.
MCU pool order	MCU pool order used by this conference room, which is used to determine which MCU hosts a conference. See MCU Pool Orders on page 145. If not selected, the room uses the highest-priority pool order associated with any group to which the user belongs, or if none, the system's default pool order (see Conference Settings on page 185).
Max participants	Maximum number of callers allowed to join the conference. **Automatic** means the MCU's maximum is used. If not selected, the room uses the system's default maximum (see Conference Settings on page 185).

Field	Description
Chairperson passcode	The numeric passcode that identifies chairpersons in this room's conferences. If none, the room's conferences don't include the chairperson feature. If the user has a chairperson passcode, it appears here. You can change it to a different passcode for this room only. Must contain numeric characters only (the digits 0-9) and may be up to 16 digits long. Can't be the same as the conference passcode. **Note:** See caution for **Conference template** field above.
Conference passcode	The numeric passcode that callers must enter to join this room's conferences. If none, the room's conferences don't require a passcode. If the user has a conference passcode, it appears here. You can change it to a different passcode for this room only. Must contain numeric characters only (the digits 0-9) and may be up to 16 digits long. Can't be the same as the chairperson passcode. **Note:** See caution for **Conference template** field above.
Conference room pass-through to CDR	Optional value to put in the `userDataA` field of conference CDRs associated with this user. For instance, this might be a user ID from some external system or database.
Identify chairperson from signaling	Enables the system to attempt to identify the chairperson from a calling endpoint's SIP signaling instead of prompting the caller for the passcode. Enter the chairperson identity information to the right. This feature is not available for H.323 signaling. The chairperson identity information must exactly match either `<user>@<host>` or just `<host>` in the SIP INVITE's From header, where: • `<user>` is a name or telephone number. • `<host>` is a domain name or network address. If a match occurs, the caller enters the conference as a chairperson without being prompted for a passcode. If a match doesn't occur, the caller enters the portion of the IVR call flow that prompts for passcodes.
Resource priority namespace	In an Assured Services SIP (AS-SIP) environment, a Local Session Controller (LSC) can provide priority-based precedence and preemption services to ensure that the most important calls get through. If your organization has implemented such a resource prioritization mechanism and you want to assign this conference room a priority value different from the system's default (see Conference Settings on page 185), set this to the namespace being used for resource priority values. If the namespace being used isn't listed, select Custom and enter the name in the box below the list.

Field	Description
Resource priority value	If the RealPresence DMA system is deployed in an AS-SIP environment with a resource prioritization mechanism and Local Session Controller (LSC), set this to the priority value to assign to conferences using this conference room. If using a custom namespace, enter the value in the box below the list. The string `namespace:value` is used in the SIP Resource-Priority header of outbound calls from this conference room and recorded in the conference property changes. For inbound calls to this conference room: • If the INVITE message contains a resource priority value, the RealPresence DMA system passes that value to the MCU. • If the INVITE message doesn't contain a resource priority value, the RealPresence DMA system provides the value assigned here to the MCU on behalf of the endpoint. In either case, the resource priority value is recorded in the call property changes.

Presence	In a Microsoft® Lync 2013 environment, you can configure presence publishing (the publishing of VMR status to a Lync 2013 client contact list) for each VMR. Enable this check box to override the system-wide default presence publishing settings defined on the **Admin > Conference Manager > Conference Settings** page.
	Note: This property is visible only if the **Publish presence for Polycom conference contacts** check box is enabled on the **Admin > Conference Manager > Conference Settings** page.
	Depending on the settings of the **Publish presence for Polycom conference contacts** and **Create Polycom conference contacts** check boxes on the **Admin > Conference Manager > Conference Settings** page, there are two modes of operation for this field:
	• When **Publish presence for Polycom conference contacts** is checked and **Create Polycom conference contacts** is unchecked, the following options are displayed:
	  ⅄ **Publish presence**
	  ⅄ **Do not publish presence**
	These options control whether the RealPresence DMA system will publish presence status for this Polycom conference contact.
	• When both **Publish presence for Polycom conference contacts** and **Create Polycom conference contacts** are checked, the following options are displayed:
	  ⅄ **Create contact and publish presence**
	  ⅄ **Do not create contact or publish presence**
	These options control whether the RealPresence DMA system will create an Active Directory contact resource for and publish presence for this Polycom conference contact.

Conference Duration	Maximum duration of a conference (in hours and minutes) or **Unlimited** (the maximum in this case depends on the MCU). If not selected, the room uses the longest duration associated with any group to which the user belongs, or if none, the system's default maximum duration (see Conference Settings on page 185).

Field	Description
Dial-out Presets	If selected, this conference room is for a *preset dial-out* conference, referred to in the Polycom RealPresence Resource Manager system as an *Anytime* conference. When someone dials in and starts a conference, the system dials out to the entries in the **Dial-out Participants** list. (See the notes below for exceptions.) Clearing this check box lets you turn off the automatic dial-out temporarily without losing the configuration data. **Note:** To prevent unauthorized persons from being able to trigger the dial-out, be sure that you: • Set **Conference template** to a template that requires a chairperson to start the conference (see Edit Conference Template Dialog Box on page 206). • Specify a chairperson passcode for this conference room or this user (see Edit User Dialog Box on page 307). **Note:** The Polycom RealPresence Resource Manager system doesn't support the use of conference passcodes for Anytime conferences, only for scheduled conferences. **Note:** Dial-outs to endpoints with call forwarding set are not forwarded. **Note**: If the conference template in use requires a chairperson, the dial-out doesn't occur until the first chairperson has joined, regardless of the number of other participants in the conference. Similarly, if the conference includes a conference passcode, the dial-out will not occur until a participant enters the passcode successfully.
Audio-Only IVR Dial-out	Enables you to link this preset conference to an external audio conferencing bridge. Requires a Polycom RealPresence Collaboration Server or RMX MCU with ISDN service configured. In the **Digits** field, specify the E.164 number that the MCU's ISDN service must dial to connect to the audio conferencing bridge. Valid characters are **0123456789*#**. In the **IVR DTMF** field, specify any DTMF digits such as an access code or PIN to send to the audio conferencing bridge after connecting. Valid characters are **0123456789*#**, plus **p** to specify a pause. Like the dial-outs to participants, this dial-out takes place when the conference starts. **Note:** If no Polycom MCU with ISDN service is available in the MCU pool order used by this conference room, the conference fails. **Note:** When the last participant leaves the VMR (that is, when only participants on the audio conferencing bridge remain), the link to the audio conferencing bridge is terminated and the conference ends.
Dial-out Participants	Lists the names and URIs of the participants to be automatically dialed when the conference starts. Click **Add** to add a participant. Click **Edit** or **Delete** to modify or remove the selected participant.

See also:

Users on page 303
Conference Rooms Dialog Box on page 310
Add Dial-out Participant Dialog Box on page 321
Edit Dial-out Participant Dialog Box on page 321
Conference Rooms Procedures on page 323

Edit Conference Room Dialog Box

Lets you view or modify a conference room's details. The following table describes the parts of the **Edit Conference Room** dialog box.

Field	Description
Room ID	The unique ID of the conference room. Can't be edited for an enterprise conference room or calendared meeting (Polycom Conferencing for Outlook) conference room. For a custom conference room, click **Generate** to let the system pick an available ID (from the range set in Conference Settings). If using alphanumeric conference room IDs, don't include multiple consecutive spaces or the following characters: `()&%#@|"':;,` If the ID includes any other punctuation characters, it must start with an alphanumeric character and end with an alphanumeric character.
Dial-in #	Number used to dial into conference room. Automatically set to the dialing prefix (see Conference Settings on page 185) plus room ID.
Territory	The territory to which the conference room is assigned. A conference room's territory assignment determines which RealPresence DMA cluster hosts its conferences (the primary cluster for the territory, or its backup cluster if necessary). If not selected, the conference room is assigned as follows (in priority order listed): • To the territory associated with the user (see Edit User Dialog Box on page 307). • Otherwise, to the territory associated with the AD group the user belongs to (if more than one, the lexically first group) (see Edit Group Dialog Box on page 327). • Otherwise, the system's default territory (see Conference Settings on page 185).
Conference template	The template used by the conference room, which defines the conference properties (or links to the Polycom RealPresence Collaboration Server or RMX profile) used for its conferences (see Conference Templates on page 190). If not selected, the room uses the highest-priority template associated with any group to which the user belongs, or if none, the system's default template (see Conference Settings on page 185). **Caution:** If this template is linked to a RealPresence Collaboration Server or RMX profile, the profile's IVR service determines whether callers are prompted for passcodes: • If the profile's IVR service prompts for passcodes, callers are prompted even if the conference doesn't have a passcode. • If the profile's IVR service doesn't prompt for passcodes, callers aren't prompted even if the conference has a conference or chairperson passcode.

Field	Description
MCU pool order	MCU pool order used by this conference room, which is used to determine which MCU hosts a conference (see MCU Pool Orders on page 145). If not selected, the room uses the highest-priority pool order associated with any group to which the user belongs, or if none, the system's default pool order (see Conference Settings on page 185).
Max participants	Maximum number of callers allowed to join the conference. **Automatic** means the MCU's maximum is used. If not selected, the room uses the system's default maximum (see Conference Settings on page 185).
Chairperson passcode	The numeric passcode that identifies chairpersons in this room's conferences. If none, the room's conferences don't include the chairperson feature. If the user has a chairperson passcode, it appears here. You can change it to a different passcode for this room only. Must contain numeric characters only (the digits 0-9) and may be up to 16 digits long. Can't be the same as the conference passcode. **Note:** See caution for **Conference template** field above.
Conference passcode	The numeric passcode that callers must enter to join this room's conferences. If none, the room's conferences don't require a passcode. If the user has a conference passcode, it appears here. You can change it to a different passcode for this room only. Must contain numeric characters only (the digits 0-9) and may be up to 16 digits long. Can't be the same as the chairperson passcode. **Note:** See caution for **Conference template** field above.
Conference room pass-through to CDR	Optional value to put in the `userDataB` field of conference CDRs associated with this user and the userDataB field of call CDRs to this conference room. For instance, this might be a user ID from some external system or database.
Identify chairperson from signaling	Enables the system to attempt to identify the chairperson from a calling endpoint's SIP signaling instead of prompting the caller for the passcode. Enter the chairperson identity information to the right. This feature is not available for H.323 signaling. The chairperson identity information must exactly match either `<user>@<host>` or just `<host>` in the SIP INVITE's From header, where: • `<user>` is a name or telephone number. • `<host>` is a domain name or network address. If a match occurs, the caller enters the conference as a chairperson without being prompted for a passcode. If a match doesn't occur, the caller enters the portion of the IVR call flow that prompts for passcodes.

Field	Description
Resource priority namespace	In an Assured Services SIP (AS-SIP) environment, a Local Session Controller (LSC) can provide priority-based precedence and preemption services to ensure that the most important calls get through. If your organization has implemented such a resource prioritization mechanism and you want to assign this conference room a priority value different from the system's default (see Conference Settings on page 185), set this to the namespace being used for resource priority values. If the namespace being used isn't listed, select Custom and enter the name in the box below the list.
Resource priority value	If the RealPresence DMA system is deployed in an AS-SIP environment with a resource prioritization mechanism and Local Session Controller (LSC), set this to the priority value to assign to conferences using this conference room. If using a custom namespace, enter the value in the box below the list. The string `namespace:value` is used in the SIP Resource-Priority header of outbound calls from this conference room and recorded in the conference property changes. For inbound calls to this conference room: • If the INVITE message contains a resource priority value, the RealPresence DMA system passes that value to the MCU. • If the INVITE message doesn't contain a resource priority value, the RealPresence DMA system provides the value assigned here to the MCU on behalf of the endpoint. In either case, the resource priority value is recorded in the call property changes.

Presence	In a Microsoft® Lync 2013 environment, you can configure presence publishing (the publishing of VMR status to a Lync 2013 client contact list) for each VMR. Enable this check box to override the system-wide default presence publishing settings defined on the **Admin > Conference Manager > Conference Settings** page.
	Note: This property is visible only if the **Publish presence for Polycom conference contacts** check box is enabled on the **Admin > Conference Manager > Conference Settings** page.
	Depending on the settings of the **Publish presence for Polycom conference contacts** and **Create Polycom conference contacts** check boxes on the **Admin > Conference Manager > Conference Settings** page, there are two modes of operation for this field:
	• When **Publish presence for Polycom conference contacts** is checked and **Create Polycom conference contacts** is unchecked, the following options are displayed:
	  ⅄ **Publish presence**
	  ⅄ **Do not publish presence**
	These options control whether the RealPresence DMA system will publish presence status for this Polycom conference contact.
	• When both **Publish presence for Polycom conference contacts** and **Create Polycom conference contacts** are checked, the following options are displayed:
	  ⅄ **Create contact and publish presence**
	  ⅄ **Do not create contact or publish presence**
	These options control whether the RealPresence DMA system will create an Active Directory contact resource for and publish presence for this Polycom conference contact.

Field	Description
Conference Duration	Maximum duration of a conference (in hours and minutes) or **Unlimited** (the maximum in this case depends on the MCU). If not selected, the room uses the longest duration associated with any group to which the user belongs, or if none, the system's default maximum duration. (see Conference Settings on page 185).
Calendar Event	This section appears only for calendared meeting (Polycom Conferencing for Outlook) conference rooms. It shows the following (read-only): • Start time and date (from the meeting invitation). • Expiration date. The conference room is deleted from the system after this date.
Dial-out Presets	If selected, this conference room is for a *preset dial-out* conference, referred to in the Polycom RealPresence Resource Manager system as an *Anytime* conference. When someone dials in and starts a conference, the system dials out to entries in the **Dial-out Participants** list. Clearing this check box lets you turn off the automatic dial-out temporarily without losing the configuration data. **Note:** To prevent unauthorized persons from being able to trigger the dial-out, be sure that you: • Set **Conference template** to a template that requires a chairperson to start the conference (see Edit Conference Template Dialog Box on page 206). • Specify a chairperson passcode for this conference room or this user (see Edit User Dialog Box on page 307). **Note:** The Polycom RealPresence Resource Manager system doesn't support the use of conference passcodes for Anytime conferences, only for scheduled conferences. **Note:** Dial-outs to endpoints with call forwarding set are not forwarded.
Audio-Only IVR Dial-out	Enables you to link this preset conference to an external audio conferencing bridge. Requires a Polycom RealPresence Collaboration Server or RMX MCU with ISDN service configured. In the **Digits** field, specify the E.164 number that the ISDN service must dial to connect to the audio conferencing bridge. In the **IVR DTMF** field, specify any DTMF digits (such as an access code or PIN) to send to the audio conferencing bridge after connecting (use **p** to specify a pause). Like the dial-outs to participants, this dial-out takes place when the conference starts. **Note:** If no Polycom MCU with ISDN service is available in the MCU pool order used by this conference room, the conference fails. **Note:** When the last participant leaves the VMR (that is, when only participants on the audio conferencing bridge remain), the link to the audio conferencing bridge is terminated and the conference ends.
Dial-out Participants	Lists the names and URIs of the participants to be automatically dialed when the conference starts. Click **Add** to add a participant. Click **Edit** or **Delete** to modify or remove the selected participant.

See also:

Users on page 303
Conference Rooms Dialog Box on page 310
Conference Rooms Procedures on page 323

Add Dial-out Participant Dialog Box

Lets you add a participant to the conference room's **Dial-out Participants** list. When someone dials into the conference room and starts a conference, the system dials out to the participants in the list. The following table describes the parts of the **Add Dial-out Participant** dialog box.

Field	Description
Participant name	The name of the participant.
Dial-out URI	Dial string used to dial the participant. Depending on the dial plan, the protocol prefix (such as sip: or tel:) may be required.

See also:

Add Conference Room Dialog Box on page 312
Edit Conference Room Dialog Box on page 317

Edit Dial-out Participant Dialog Box

Lets you edit a participant in the conference room's **Dial-out Participants** list, changing the name or dial string for the participant. When someone dials into the conference room and starts a conference, the system dials out to the participants in the list. The following table describes the parts of the **Edit Dial-out Participant** dialog box.

Field	Description
Participant name	The name of the participant.
Dial-out URI	Dial string used to dial the participant. Depending on the dial plan, the protocol prefix (such as sip: or tel:) may be required.

See also:

Add Conference Room Dialog Box on page 312
Edit Conference Room Dialog Box on page 317

Users Procedures

Caution: Remove the Default Admin Account

To eliminate a serious security risk, perform the first procedure below as soon as possible after installing your system.

To remove the default admin account and create a local account for yourself with administrative privileges

1. Log in as admin and go to **User > Users**.

   The **Users** page appears.
2. Create a local user account for yourself with the Administrator role. See To add a local user on page 322.
3. Log out and log back in using your new local account.
4. Go to **Users > Users** and delete the admin account. See To delete a local user on page 323.

To find a user or users

1. Go to **User > Users**.

   The **Users** page appears.
2. For a simple search, enter a search string in the **Search users** field and press ENTER.

   The system matches the string you enter against the beginning of the user ID, first name, and last name. If you enter “sa” it displays users whose IDs or first or last names begin with “sa.” To search for a string not at the beginning of the field, you can use an asterisk (*) as a wildcard. You can restrict the search to local users by selecting the check box.
3. For more search options, click the down arrow to the right.

   Additional controls appear that let you search specific fields and use specific filters.
4. Select the filters you want, enter search strings for one or more fields, and click **Search**.

   The system displays the users matching your search criteria.

Note: Search Results Could Be Unsorted

The RealPresence DMA system’s user database is unsorted. To avoid performance issues, if your query matches more than 4000 users, no attempt is made to sort the results on the server side before returning the matching records.

To add a local user

1. Go to **User > Users**.
2. In the **Actions** list, click **Add**.
3. In the **Add User** dialog box, complete the **General Info** fields. See Add User Dialog Box on page 305.
4. To create the new user account, but not activate it immediately, select **Account Disabled**.
5. To assign the user additional roles (besides Conferencing User), click **Roles**. Select the role or roles you want to assign and use the arrow button to move them to the **Selected Roles** list.

   Explicitly assigned roles give the user access to the system management interface.
6. Click **OK**.

To edit a user

1. Go to **User > Users**.
2. If necessary, filter the **Users** list to find the user to be modified.

3 Select the user and click **Edit**.

4 As required, edit the **General Info**, **Roles**, and **Conference Passcodes** sections of the **User Properties** dialog box. See Edit User Dialog Box on page 307.

   For enterprise users, you can change their roles and their chairperson and conference passcodes, and you can enable or disable their accounts, but you can't change user names, user IDs, or user passwords.

   For local users, you can change everything but the user ID. In maximum security mode, changing a user's password requires you to authenticate yourself by entering your password when prompted.

5 Click **OK**.

To delete a local user

1 Go to **User > Users**.

2 If necessary, filter the **Users** list to find the user to be deleted.

   You can only delete local users, not users added from the Active Directory.

3 Select the user and click **Delete User**.

4 In the **Delete User** dialog box, click **Yes**.

   The user is deleted from the Polycom RealPresence DMA system.

See also:

User Roles Overview on page 301

Adding Users Overview on page 302

Users on page 303

Add User Dialog Box on page 305

Edit User Dialog Box on page 307

Conference Rooms Procedures

To add a conference room to a user

1 Go to **User > Users** and select the user to whom you want to add a room.

2 In the **Actions** list, click **Manage Conf Rooms**.

   The **Conference Rooms** dialog box appears.

3 Click **Add**.

   The **Add Conference Room** dialog box appears.

4 Complete the settings for the new conference room. See Add Conference Room Dialog Box on page 312.

5 To set up this conference room for a *preset dial-out* conference (also known as an *Anytime* conference), select **Dial-out Presets** and do the following:

   a Ensure that this room or user has a chairperson passcode and that you've selected a conference template that's linked to a Polycom RealPresence Collaboration Server or RMX conference IVR service and requires a chairperson to start the conference.

b To link this preset conference to an external audio conferencing bridge (for hosting audio-only participants), in the **Digits** field enter the E.164 number for connecting to that bridge, and in the **IVR DTMF** field enter any DTMF digits (such as an access code or PIN) to send to the audio conferencing bridge after connecting (use **p** to specify a pause).

This capability requires a Polycom MCU with ISDN service.

c Under **Dial-out Participants**, add the participants to be called when the conference starts.

6 Click **OK**.

To edit one of a user's conference rooms

1 Go to **User > Users** and select the user whose conference room you want to edit.

2 In the **Actions** list, click **Manage Conf Rooms**.

The **Conference Rooms** dialog box appears.

3 Select the conference room you want to edit and click **Edit**.

The **Edit Conference Room** dialog box appears.

4 Modify the settings you want to change. See Edit Conference Room Dialog Box on page 317.

5 To set up this conference room for a *preset dial-out conference* (also known as *anytime conference*), select **Dial-out Presets** and do the following:

a Ensure that this room or user has a chairperson passcode and that you've selected a conference template that's linked to a Polycom RealPresence Collaboration Server or RMX conference IVR service and requires a chairperson to start the conference.

b To link this preset conference to an external audio conferencing bridge, in the **Digits** field enter the E.164 number for connecting to that bridge, and in the **IVR DTMF** field enter any DTMF digits (such as an access code or PIN) to send to the audio conferencing bridge after connecting (use **p** to specify a pause).

This capability requires a Polycom MCU with ISDN service.

c Under **Dial-out Participants**, add the participants to be called when the conference starts.

6 To turn of automatic dial-out temporarily without losing the configuration data, clear the **Dial-out Presets** check box.

7 Click **OK**.

To delete one of a user's custom conference rooms

1 Go to **User > Users** and select the user whose custom conference room you want to delete.

2 In the **Actions** list, click **Manage Conf Rooms**.

The **Conference Rooms** dialog box appears.

3 Select the conference room you want to remove and click **Delete**.

You can't delete an enterprise conference room or a conference room created by the system for a calendared meeting.

4 When prompted to confirm, click **Yes**.

See also:

Users on page 303
Conference Rooms Dialog Box on page 310
Add Conference Room Dialog Box on page 312
Edit Conference Room Dialog Box on page 317
Users Procedures on page 321

Groups

Groups functionality is available only if your Polycom RealPresence DMA system is integrated with an Active Directory. User groups are defined in your Active Directory and imported into the Polycom RealPresence DMA system from there.

Note: Enterprise vs. Local Users

You must be an enterprise user (with the appropriate user role assignments) to see and work with enterprise users. A local user can only see other local users, regardless of user roles.

Microsoft Active Directory provides two group types and four group scopes. The Polycom RealPresence DMA system supports only security groups (not distribution groups) with universal or global scope.

The **Groups** page provides access to information about enterprise groups. From it, you can:

- Import enterprise groups.
- Specify Polycom RealPresence DMA system roles to be assigned to members of a group.
- Specify a conference template and MCU pool order to be used for a group.

The following table describes the fields on the **Groups** page.

Field	Description
Group Name	Name of the group, as defined in the Active Directory.
Description	Description from the Active Directory.
Domain	Name of the domain to which the group belongs.
Class of service	Class of service assigned to the group, which determines the priority of the group's calls. If none, the group receives the system's default class of service. See Conference Settings on page 185. **Note:** A class of service may also be assigned to a user (see Users on page 303) or an endpoint (see Endpoints on page 91). **Note:** When a device calls a conference room (VMR), the class of service of the conference room applies to the call, not the class of service of the user or device.

Field	Description
Conference Template	Template assigned to the group, if any, which defines the conference properties (or links to the Polycom MCU profile) used for its conferences. See Conference Templates on page 190. The template assignment can be made at the conference room, AD group, or system default level.
MCU Pool Order	MCU pool order assigned to this group, if any, which is used to determine which MCU hosts a conference. See MCU Pool Orders on page 145. The pool order assignment can be made at the conference room, AD group, or system default level.
Territory	Territory to which the group's conference rooms (virtual meeting rooms, or VMRs) are assigned. A conference room's territory assignment determines which RealPresence DMA cluster hosts the conference (the primary cluster for the territory, or its backup cluster if necessary). The assignment can be made at the conference room level, the user level, the AD group level, or the system default level.
Assigned Roles	RealPresence DMA system roles, if any, that are automatically assigned to members of this group (all users automatically have the Conferencing User role; it's not listed or explicitly assigned). See User Roles Overview on page 301.

See also:

Users on page 303

Edit Group Dialog Box on page 327

Enterprise Groups Procedures on page 329

Import Enterprise Groups Dialog Box

The following table describes the fields in the **Import Enterprise Groups** dialog box.

Field	Description
Search domain	Optionally, select a domain to search.
Group	To find all groups, leave blank. To find groups beginning with a specific letter or letters, enter the string. Then click **Search**. You can use a wildcard (*) for more complex searches, such as: • s*admins • *eng*
Search results	Lists the security groups in your Active Directory that match the search string. The system only retrieves the first 1000 groups found. If the count shows 1000, you may need to refine your search criteria.
Groups to import	Lists the groups you've selected for import, using the arrows to move them from the **Search results** box.

See also:

Users on page 303
Groups on page 325
Enterprise Groups Procedures on page 329

Edit Group Dialog Box

The following table describes the fields in the **Edit Group** dialog box.

Field	Description
Class of service	Select to assign the group a class of service other than the system's default (see Conference Settings on page 185). **Note:** When a device calls a conference room (VMR), the class of service of the conference room applies to the call, not the class of service of the group, user, or device.
Maximum bit rate (kbps)	If **Class of service** is selected, specifies the maximum bit rate for the group.
Minimum downspeed bit rate (kbps)	If **Class of service** is selected, specifies the minimum bit rate to which the group's calls can be reduced (downspeeded).
Conference template	Select to assign a template other than the system's default (see Conference Settings on page 185). The template assignment can be made at the conference room level, AD group level, or system default level. It defines the conference properties (or links to the Polycom MCU profile) used for its conferences. See Conference Templates on page 190.
MCU pool order	Select to assign the group an MCU pool order other than the system's default (see Conference Settings on page 185). The pool order assignment can be made at the conference room level, AD group level, or system default level. It's used to determine which MCU hosts a conference. See MCU Pool Orders on page 145.
Territory	Select to assign the group's conference rooms to a territory other than the system's default (see Conference Settings on page 185). A conference room's territory assignment determines which RealPresence DMA cluster hosts the conference (the primary cluster for the territory, or its backup cluster if necessary). The assignment can be made at the conference room level, user level, AD group level, or system default level. **Note:** If a user belongs to more than one group, that user's territory setting is inherited from the lexically first group (but doesn't change if the group is renamed). To be certain that a specific user's conference rooms are assign to a specific territory, assign that territory directly to the user. See Edit User Dialog Box on page 307.

Field	Description
Presence publishing options	In a Microsoft® Lync 2013 environment, you can configure presence publishing (the publishing of VMR status to a Lync 2013 client contact list) for any VMR that belongs to a member of this group. Enable this check box to override the system-wide default presence publishing settings defined on the **Admin > Conference Manager > Conference Settings** page. **Note**: This property is visible only if the **Publish presence for Polycom conference contacts** check box is enabled on the **Admin > Conference Manager > Conference Settings** page. **Note**: This property can be overridden on a per-VMR basis by the **Presence** setting on the **User > Users > Manage Conf Rooms** dialog box. Depending on the settings of the **Publish presence for Polycom conference contacts** and **Create Polycom conference contacts** check boxes on the **Admin > Conference Manager > Conference Settings** page, there are two modes of operation for this field: • When **Publish presence for Polycom conference contacts** is checked and **Create Polycom conference contacts** is unchecked, the following options are displayed: ⅄ **Publish presence** ⅄ **Do not publish presence** These options control whether the RealPresence DMA system will publish presence status for VMRs belonging to members of this group. • When both **Publish presence for Polycom conference contacts** and **Create Polycom conference contacts** are checked, the following options are displayed: ⅄ **Create contact and publish presence** ⅄ **Do not create contact or publish presence** These options control whether the RealPresence DMA system will create an Active Directory contact resource for and publish presence for VMRs that belong to members of this group.
Default Conference Duration	Select to specify a maximum conference duration other than the system's default (see Conference Settings on page 185). If you select **Unlimited**, the maximum depends on the MCU.
Available roles	Lists the Polycom RealPresence DMA system roles available for automatic assignment to members of this group (all users automatically have the Conferencing User role; it's not listed or explicitly assigned). See User Roles Overview on page 301. Use the arrows to move roles from the **Available roles** box to the **Selected roles** box or vice versa.
Selected roles	Lists the roles you've selected for members of this group. Remember, ordinary Conferencing Users have no explicitly assigned role.

See also:

Users on page 303

Groups on page 325

Import Enterprise Groups Dialog Box on page 326

Enterprise Groups Procedures

The Polycom RealPresence DMA system's ability to import an enterprise group and assign it a conference template lets you customize the conferencing experience for all members of the group.

The ability to assign defined Polycom RealPresence DMA user roles to an enterprise group lets you manage administrative access to the Polycom RealPresence DMA system in your Active Directory.

You must be logged into the system as an enterprise user with the Administrator role to perform these procedures.

To set up an enterprise group for Polycom RealPresence DMA management and operations users

1. In your Active Directory, create a security group containing the users to whom you want to give access to the Polycom RealPresence DMA system's management and operations interface.

   It's up to you whether you want to assign all the user roles to a single group or create separate groups for each user role.
2. On the Polycom RealPresence DMA system, go to **User > Groups**.
3. In the **Actions** list, click **Import Enterprise Groups**.
4. In the **Import Enterprise Groups** dialog box, use **Search** to find the system administration group you created. Then move it to the **Groups to import** box and click **OK**. See Import Enterprise Groups Dialog Box on page 326.
5. On the **Groups** page, select your new group and, in the **Actions** list, click **Edit**.
6. In the **Edit Group** dialog box, move the user roles you want to give members of this group to the **Selected roles** box. See Edit Group Dialog Box on page 327.
7. Click **OK**.

   All members of this group will now share the system access privileges you assigned to the group.
8. To grant Polycom RealPresence DMA system access privileges to a user or remove those privileges, just add or remove the user from the appropriate enterprise group.

To specify which MCUs a group uses by assigning an MCU pool order

1. If necessary, create the MCU pool and the pool order needed. See MCU Pool Procedures on page 144 and MCU Pool Order Procedures on page 150.
2. Go to **User > Groups**, select the group to which you need to assign the pool order, and in the **Actions** list, click **Edit**.
3. In the **Edit Group** dialog box's **MCU pool order** list, select the pool order to be used for this group. See Edit Group Dialog Box on page 327.
4. Click **OK**.

To set up a custom conferencing experience for an enterprise group

1. Go to **Admin > Conference Manager > Conference Templates** and create a template that defines the conferencing experience for this group. See Conference Templates Procedures on page 216.

2 Optionally, in the **Actions** list, click **Move Up** until your new conference template has Priority 1.

   This ensures that users who have access to multiple conference templates will use this one for their enterprise conference room. You can choose a different priority level, but then some members of the group for which you created the template may end up using a higher-ranking template.

3 Go to **User > Groups**, select the group for which you created the template, and in the **Actions** list, click **Edit**.

4 In the **Edit Group** dialog box's **Conference template** list, select the template you created for this group. See Edit Group Dialog Box on page 327.

5 Click **OK**.

See also:

Users on page 303

Groups on page 325

Import Enterprise Groups Dialog Box on page 326

Edit Group Dialog Box on page 327

Login Sessions

The **Login Sessions** page displays information about the currently active user login sessions and enables you to terminate a login session. You must be an Administrator user to terminate a login session.

Note: Session Termination and Maximum Security Mode
Session termination is not supported in **Maximum security** mode.

The following table describes the parts of the **Login Sessions** list.

Column	Description
Domain	The domain to which the user belongs.
User ID	The user's login name.
Host Address	The IP address from which the user logged in.
Node Name	The Polycom RealPresence DMA system server on which the user logged in.
Creation Time	The time and date when the user logged in.

To terminate a user's login session

1 In the **Login Sessions** list, select the login session you want to terminate.

2 In the **Actions** list, click **Terminate Session**.

   A dialog box asks you to confirm.

3 Click **Yes**.

   The system terminates the session immediately. The terminated user is informed that the connection to the server was lost.

See also:

Session on page 58

Users and Groups on page 301

Change Password Dialog Box

The system may be configured to expire local user passwords after a certain number of days (see Local Password on page 58). If your password has expired when you try to log into the system, the **Change Password** dialog box prompts you for a new password.

You can change your password at other times by going to **User > Change Passwords** (but not more often than specified on the **Local Password** page).

The following table describes the fields in the dialog box.

Field	Description
User ID	The user name with which you're logging in. Display only.
Old password	For security reasons, you must re-enter your old password.
New password	Enter a new password. The password must satisfy the local password rules specified for the system (see Local Password on page 58).
Confirm new password	Retype the password to confirm that you entered it correctly.

See also:

Security Settings on page 50

Users and Groups on page 301

System Management and Maintenance

This chapter describes the following Polycom® RealPresence® Distributed Media Application™ (DMA®) 7000 system operations topics:

- Management and Maintenance Overview
- Recommended Regular Maintenance
- Dashboard
- Alerts
- System Log Files
- Troubleshooting Utilities
- Diagnostics for your Dell Server
- Backing Up and Restoring
- Upgrading the Software
- Adding a Second Server
- Replacing a Failed Server
- Shutting Down and Restarting

Management and Maintenance Overview

The Polycom RealPresence DMA system requires relatively little ongoing maintenance beyond monitoring the status of the system and downloading backups and other data you want to archive. All system management and maintenance tasks can be performed in the management interface. See the appropriate topic for your user role:

- Administrator Responsibilities
- Auditor Responsibilities
- Provisioner Responsibilities

Administrator Responsibilities

As a Polycom RealPresence DMA system administrator, you're responsible for the installation and ongoing maintenance of the system. You should be familiar with the following configurations, tasks, and operations:

- Installing licenses when the system is first installed and when additional call capacity is added. See Licenses on page 70.
- Monitoring system health and performing the recommended regular maintenance. See Recommended Regular Maintenance on page 334.

Note: System Maintenance Tasks Can Be Delegated

You can delegate some of the maintenance tasks to a provisioner. See Provisioner Responsibilities on page 334.

- Using the system tools provided to aid with system and network diagnostics, monitoring, and troubleshooting. See Troubleshooting Utilities on page 372. Should the need arise, Polycom Global Services personnel may ask you to run these tools.
- Upgrading the system when upgrades/patches are made available. See Upgrading the Software on page 380.

Administrative Best Practices

The following are some of our recommendations for administrative best practices:

- Perform the recommended regular maintenance.
- Except in emergencies or when instructed to by Polycom Global Services personnel, don't reconfigure, install an upgrade, or restore a backup when there are active calls and conferences on the system. Many of these operations will require a system restart to complete, which will result in these calls and conferences being dropped. Before performing these operations, busy out all MCUs and wait for all conferencing activity to cease.
- Before you reconfigure, install an upgrade, or restore a backup, manually create a new backup. Then download and archive this backup in the event that something unforeseen occurs and it becomes necessary to restore the system to a known good state.
- For proper name resolution and smooth network operations, configure two or more DNS servers in your network configuration (see Network Settings on page 63). This allows the Polycom RealPresence DMA system to function properly in the event of a single external DNS failure.
- Configure at least one NTP server in your time configuration (see Time Settings on page 69) and preferably three. Proper time management helps ensure that your cluster operates efficiently and helps in diagnosing any issues that may arise in the future. Proper system time is also essential for accurate audit and CDR data.
- Unless otherwise instructed by Polycom Global Services, always use the **High Security** setting. See Security Settings on page 50.

Auditor Responsibilities

As a Polycom RealPresence DMA system auditor, you're responsible for managing the system's logging and history retention. You should be familiar with the following configurations and operations:

- Configuring logging for the system. See Logging Settings on page 80. These settings affect the number and the contents of the log archives available for download from the system. See System Log Files on page 370. Polycom Global Services personnel may ask you to adjust the logging configuration and/or download and send them logs.
- Configuring history retention levels for the system. See History Retention Settings on page 276. These settings affect how much system activity history is retained on the system and available for download as CDRs. See Call History on page 395, Conference History on page 397, and Call Detail Records (CDRs) on page 400.

Auditor Best Practices

The following are some of our recommendations for auditing best practices:

- Unless otherwise instructed by Polycom Global Services, configure logging at the debug level with a rolling frequency of every day and a retention period of 60 days. If hard drive space becomes an issue, decrease the retention period incrementally until the disk space issue is resolved.

- Download log archives regularly and back them up securely (preferably offsite as well as onsite). Delete downloaded log archives to free up disk space.
- Export CDRs regularly and back them up securely (preferably offsite as well as onsite).

Provisioner Responsibilities

As a Polycom RealPresence DMA system provisioner, you have access to many of the same features and functions as the system administrator (see Polycom RealPresence DMA System User Roles and Their Access Privileges on page 24). Your responsibilities depend on your organization's policies and the tasks delegated to you by the system administrator. For instance, you may be delegated responsibility for some of the following:

- Managing and monitoring users' conference rooms. See Users on page 303.
- Managing and monitoring registered endpoints. See Endpoints on page 91.
- Monitoring active calls. See Active Calls on page 87.
- Monitoring system health and network usage. See General system health and capacity checks on page 334.
- Monitoring call, conference, and registration history. See Call History on page 395, Conference History on page 397, and Registration History Report on page 407.
- Downloading network usage data at the appropriate intervals. See Network usage data export on page 336 and Exporting Network Usage Data on page 416.
- Downloading detailed call and conference history data at the appropriate intervals. See CDR export on page 336 and Call Detail Records (CDRs) on page 400.

Recommended Regular Maintenance

Perform the following tasks to keep your Polycom RealPresence DMA system operating trouble-free and at peak efficiency. These tasks can be done quickly and should be run at least weekly.

Regular archive of backups

Log into the Polycom RealPresence DMA system, go to **Maintenance > Backup and Restore**, and check for new backups. If there are new backups, download and archive the latest one. Delete backups after downloading in order to free up disk space.

Every night, each Polycom RealPresence DMA system cluster determines whether its configuration or local user data have changed. If so, it creates a configuration-only backup of the system. For details on backups, see Backing Up and Restoring on page 374.

General system health and capacity checks

On the **Dashboard** (see Dashboard on page 336), verify that:

- There are no alerts indicating problems with any part of the system.
- The **Supercluster Status** pane shows the correct number of servers and clusters, and the network interfaces that should be working (depending on your IP type and split network settings) are up (green up arrow) and in full duplex mode, with the speed correct for your enterprise network.
- The **Cluster Info** pane's **Resources** section shows that there is adequate free disk space. If the system is using more than 80% of disk space, free up space by doing some or all of the following:

- Go to **Maintenance > Backup and Restore** and download and delete backup files (see Backing Up and Restoring on page 374).
- Go to **Maintenance > System Log Files** and download and delete log file archives (you must have the Auditor role to do so; see System Log Files on page 370).
- Go to **Admin > Local Cluster > Logging Settings** and reducing the retention period for log archives (see Logging Settings on page 80).
- Go to **Admin > Call Server > History Retention Settings** and reduce the retention values (you must have the Auditor role to do so; see History Retention Settings on page 276).

- The **Territories Status** pane shows that all territories have the correct capabilities, are being managed by their primary cluster, and (if your deployment is so configured), have a backup cluster.

Go to **Reports > Network Usage** (see Network Usage Report on page 415) and view the graph for each cluster with the following capacity-related metrics selected:

- **Call Counts** — If the number of concurrent calls approaches the license limit, you may need to rebalance territory responsibilities, add licensed capacity, or add another cluster.
- **Conference Manager Calls** — If the number of concurrent calls approaches the number of MCU ports available, you may need to add MCU capacity.

View the graph for each site, site link, and subnet with **Calls Dropped** and **Calls Downspeeded** selected. These metrics show only calls dropped or downspeeded due to insufficient bandwidth at the selected throttlepoint. Any values above zero are indicators of bandwidth saturation and suggest that it's time to increase network bandwidth.

Microsoft Active Directory health

If the Polycom RealPresence DMA system is integrated with an Active Directory, check the following (you must be logged in as an enterprise user):

- **Reports > Microsoft Active Directory Integration** (see Active Directory Integration Report on page 409). Check the status and results of the last cache update, and verify that membership information for imported groups, if any, was successfully loaded.
- **Reports > Conference Room Errors** (see Conference Room Errors Report on page 412). Check:
  - The total number of users and the number of users with conference room IDs. Make sure both are about what you would expect for your system (it may be helpful to keep records for comparison over time). Contact your Active Directory administrator if necessary.
  - The number of users with blank, invalid, or duplicate conference room IDs. These are enterprise users not properly provisioned for conferencing on the Polycom RealPresence DMA system. They're listed below. Contact your Active Directory administrator to resolve issues with these users.
- **Reports > Orphaned Groups and Users** (see Orphaned Groups and Users Report on page 411). Verify that the number of orphans is not unexpectedly large.
- **Reports > Enterprise Passcode Errors** (see Enterprise Passcode Errors Report on page 414). If you're assigning conference and/or chairperson passcodes to enterprise users, verify that the number of passcode errors is not unexpectedly large.

Security configuration

Go to **Admin > Local Cluster > Security Settings** and verify that the security settings are what you expect (we strongly recommend always using the high security mode). Any departure from the settings you expected to see may indicate that your system has been compromised. See Security Settings on page 50.

Certificates

Go to **Admin > Local Cluster > Certificates** and verify that the list of certificates contains the certificates you've installed and looks as you would expect (an archived screen capture may be helpful for comparison).

Display the details for any certificate you've installed and verify they are as expected (again, an archived screen capture may be helpful for comparison).

Network usage data export

The system stores up to approximately 1 GB of network usage data, deleting the oldest as needed. Data size is based on site topology complexity, not usage, so it's very predictable. On a system with the largest supported site topology, it's only one day's worth of usage data, but most systems should retain data for a substantially longer period.

Determine an appropriate download interval for your site topology and download network usage data to your PC at that interval. See Exporting Network Usage Data on page 416.

CDR export

If you want to preserve detailed call and conference history data in spreadsheet form off the Polycom RealPresence DMA system, periodically download the system's CDR (call detail record) data to your PC. See Call Detail Records (CDRs) on page 400.

Dashboard

When you log into the Polycom RealPresence DMA system, the system **Dashboard** appears. You can return to the **Dashboard** from any other page by clicking the  ("home") button to the left of the menus. Use the system **Dashboard** to view information about system health and activity levels.

The **Dashboard** is highly customizable. Initially, it contains six default panes. You can close any of these that you don't want, and you can add others. You can add multiple copies of the same pane, each showing information for a different cluster. The maximum number of panes is 50.

Click the **Add Panes** button to see the panes that are available. In the **Settings** dialog box (see Settings Dialog Box on page 24), you can specify the maximum number of columns for the **Dashboard**. Note that this is a *maximum*, not a fixed value. The panes have a minimum width, and they arrange themselves to best fit your browser window. Depending on the size of your browser window, there may be fewer columns than the maximum you select. For instance, at the minimum supported display resolution of 1280x1024, only two columns can be displayed.

The system remembers your **Dashboard** configuration, and you'll see the same configuration when you log into any cluster of the supercluster.

The buttons on the right side of each pane's title bar let you access help, go a related page (where appropriate), maximize the pane to fill the window, restore it to its normal size, or close the pane. Hover over a button to see what it does.

An alert icon appears in the title bar of a pane if there is an alert related to its information. Hover over it to see the alert message.

See also:

Active Directory Integration Pane on page 337
Call Server Active Calls Pane on page 337
Call Server Registrations Pane on page 338
Cluster Info Pane on page 338
Conference History – Max Participants Pane on page 338
Conference Manager MCUs Pane on page 339
Conference Manager Usage Pane on page 339
Exchange Server Integration Pane on page 340
License Status Pane on page 340
Resource Management System Integration Pane on page 340
Signaling Settings Pane on page 341
Supercluster Status Pane on page 341
Territory Status Pane on page 341
User Login History Pane on page 342

Active Directory Integration Pane

Displays information about the status of Active Directory integration. If the system is integrated with AD, this pane shows:

- The territory (and cluster) responsible for refreshing the cache.
- When the cache was last refreshed and by which server.
- The AD server address and user ID used.
- The number of enterprise conference rooms created.

Click the **Link** button to go to the **Microsoft Active Directory** page.

See also:

Dashboard on page 336

Call Server Active Calls Pane

Displays the current number of calls in total and for each cluster of the supercluster and the licensed call limit in total and for each cluster.

In a superclustered environment, a call may span multiple clusters. Each “leg” of such a call is counted on the cluster it’s on. The total for all clusters includes the total of all legs of cluster-spanning calls.

If H.323 signaling is enabled, the call mode (direct or routed) is also shown.

Click a column heading to sort on that column. Click the **Link** button to go to the **Active Calls** page.

See also:

Dashboard on page 336

Call Server Registrations Pane

Displays the total number of active (including active quarantined) and inactive (including inactive quarantined and blocked) endpoint registrations and the number that failed in the past 24 hours. Hover over a registration number to see the limit.

Also displays the total number of registrations for each cluster of the supercluster. Hover over a cluster's total to see the breakdown between active and inactive.

Click a column heading to sort on that column. Click the **Link** button to go to the **Endpoints** page.

See also:

Dashboard on page 336

Cluster Info Pane

Displays detailed information about the selected cluster. For a two-server cluster, the pane contains a tab for each server. The tab label indicates which server is currently active. Each tab contains the following information about the server:

- Current time and uptime
- Server, Proxias, and application software version numbers
- Hardware model and serial number
- Time source
- Management network MAC and IP addresses
- Signaling network MAC and IP addresses (if configured for split network)
- CPU usage percentage (all cores), as reported by Hyperic SIGAR
- Memory usage (hover over the bar chart to see details)

  It's normal for memory usage to be high.
- Swap space (total and free)
- Disk space usage (actual and percentage)
- Log space usage (actual and percentage) and next scheduled log purge

Click the **Link** button to go to the **Logging Settings** page.

See also:

Dashboard on page 336

Conference History – Max Participants Pane

Displays a bar graph showing variations in the maximum number of Conference Manager conference participants over the time span you select.

The graph shows the data for all Conference Manager clusters. The **Ad-hoc participants** category includes all dial-outs and all dial-ins to non-scheduled conferences. The **Other participants** category includes all dial-ins to conferences scheduled via Polycom Conferencing for Outlook (calendared conferences) or via an API client such as the Polycom RealPresence Resource Manager system.

Click the **Link** button to go to the **Conference History** page.

See also:

Dashboard on page 336

Conference Manager MCUs Pane

Displays information about all the MCUs that are managed by Conference Manager to host conference rooms (virtual meeting rooms, or VMRs).

The information shown includes the MCU's connection and service status, its capabilities (recording, IVR, and SVC), its reliability (in terms of disconnects and call failures), and the number of ports in use and available to Conference Manager.

Hover over an icon to see an explanation of it. Click a column heading to sort on that column. Click the **Link** button to go to the **MCUs** page, or click an MCU name to go to the **MCUs** page with that MCU selected.

Note: MCUs and Conference Manager

An MCU may be connected to up to three Conference Manager clusters. If one of the three Conference Managers loses its connection to the MCU, this is counted as 0.33 disconnects. If all connections to the MCU are lost, this is counted as 1 disconnect.

Note: MCUs and Resource Usage

The RealPresence DMA system reports port numbers based on CIF resource usage. Version 8.1 and later Polycom MCUs report HD720p30 port numbers. In general, 3 CIF = 1 HD720p30, but it varies depending on bridge/card type and other factors.

See your Polycom RMX or RealPresence Collaboration Server documentation for more detailed information about resource usage.

See also:

Dashboard on page 336

Conference Manager Usage Pane

Displays usage information for Conference Manager, either for all Conference Manager clusters or for the selected cluster.

The information shown includes the territories for which Conference Manager is enabled, the number of conferences and participants, the port usage, and the number of local users and custom conference rooms.

Note: MCUs and Resource Usage

The RealPresence DMA system reports port numbers based on CIF resource usage. Version 8.1 and later Polycom MCUs report HD720p30 port numbers. In general, 3 CIF = 1 HD720p30, but it varies depending on bridge/card type and other factors.

See your Polycom RMX or RealPresence Collaboration Server documentation for more detailed information about resource usage.

See also:

Dashboard on page 336

Exchange Server Integration Pane

If the Polycom RealPresence DMA system is integrated with a Microsoft Exchange server (see Microsoft Exchange Server Integration on page 175), displays the following:

- The integration status, which can be one of the following:
  - **Unavailable** — A service status or inter-server communication problem prevented determination of the integration status.
  - **Error** — The system was unable to establish a connection to the Exchange server. This could be a network or Exchange server problem, or it could be a login failure.
  - **Awaiting Active Directory** — The system isn't integrated with the Active Directory, required for Exchange server integration.
  - **Primary SMTP mailbox not found** — The mailbox configured for the Polycom RealPresence DMA system isn't in the system's Active Directory cache.
  - **Subscription pending** — The Polycom RealPresence DMA system has asked the Exchange server to send it notifications and is waiting to receive its first notification to confirm that the Exchange server can communicate with the system. If this status persists for more than a minute or so, there is likely a configuration problem (such as an invalid certificate or the Exchange server is unable to resolve the RealPresence DMA system's FQDN).
  - **Exchange authentication failed** — The credentials for the Polycom RealPresence DMA system's mailbox are no longer valid (e.g., the password has expired).
  - **OK** — The Polycom RealPresence DMA system is receiving and processing Polycom Conferencing meeting notifications from the Exchange server.
- The host name or IP address for the Exchange server as entered on the **Microsoft Exchange Server** page.
- The Polycom RealPresence DMA system's mailbox address.
- The number of Polycom Conferencing meetings today.

Click the **Link** button to go to the **Microsoft Exchange Server** page.

See also:

Dashboard on page 336

License Status Pane

Displays the license status of the selected cluster and the number of licensed and active calls. Note that a call that has multiple "legs" (spans multiple clusters) uses a license for each leg of the call (each cluster it spans).

Click the **Link** button to go to the **Licenses** page (only available if the selected cluster is the one on which you're logged in).

See also:

Dashboard on page 336

Resource Management System Integration Pane

If the Polycom RealPresence DMA system is integrated with a Polycom RealPresence Resource Manager or CMA system (see Resource Management System Integration on page 178), displays the following:

- Host name or IP address of the RealPresence Resource Manager or CMA system.

- User name used to log into the RealPresence Resource Manager or CMA system.
- Time when site topology data was last updated from the RealPresence Resource Manager or CMA system.
- Number of territories, sites, site links, and network (MPLS) clouds in the site topology data obtained from the RealPresence Resource Manager or CMA system.

Click the **Link** button to go to the **Polycom RealPresence Resource Manager or CMA System** page.

See also:

Dashboard on page 336

Signaling Settings Pane

Displays the H.323 and SIP signaling settings for the selected cluster, including whether each is enabled and what ports are assigned.

Click the **Link** button to go to the **Signaling Settings** page.

See also:

Dashboard on page 336

Supercluster Status Pane

Displays the status of each server in every cluster of the supercluster, the status of its private, management, and signaling interfaces, and the territory for which it's responsible. A territory is green if being managed by its primary cluster, yellow if being managed by its backup cluster, and red if it's out of service (no cluster is managing it). Hover over a name or icon to see details.

Click the **Link** button to go to the **RealPresence DMAs** page.

See also:

Dashboard on page 336

Territory Status Pane

Lists each territory, its capabilities, and the primary and backup cluster responsible for it. The clusters are color-coded:

- Light green: The cluster is primary for the territory and in service.
- Gray: The cluster is not operational or it's the backup cluster and the primary is in service.
- Dark green: The cluster is busied out.
- Red: The cluster is not connected.
- Yellow: The cluster is the backup cluster for the territory, it's in service, and the primary cluster is not operational.

Hover over a cluster name to see more details. Hover over a capabilities icon to see an explanation of it. Click a column heading to sort on that column. Click the **Link** button to go to the **Territories** page.

See also:

Dashboard on page 336

User Login History Pane

Displays the following information about logins by your user ID:

- The server you're currently logged into.
- The time, date, server logged into, and source (host name or IP address) of the last successful login (prior to your current session) by your user ID.
- The time, date, server, and source of the last failed login attempt by your user ID.
- The number of consecutive failures before your current successful login.

See also:

Dashboard on page 336

Alerts

On various pages and dashboard panes, the alert icon is used to indicate an abnormal condition, problem, or just something you should be aware of. Hover over the icon to see details.

A summary of alert status appears in the menu bar, showing how many alerts exist across all clusters of a supercluster and how many are new (that is, that you haven't viewed yet).

When you click the summary data, an expanded alerts list appears, displaying the date and time, alert code, and description of each alert. In many cases, the alert description is a link to the relevant page for investigating the issue. A Help button to the right of the alert description displays the help topic for that alert, which contains additional information about the causes and recommendations for dealing with the alert.

Alert 1001

Cluster <cluster> is busied out as of YYYY-MM-DD HH:MM GMT+/-H[:MM].

You or another administrator busied out the cluster, perhaps for maintenance.

A busied-out cluster allows existing calls and conferences to continue and accepts new calls for existing conferences, but doesn't accept other new calls and conferences.

Once all existing calls and conferences have ended, the cluster is out of service.

Click the link to go to the **RealPresence DMAs** page.

See also:

Alerts on page 342

Alert 1002

Cluster <cluster> is out of service as of YYYY-MM-DD HH:MM GMT+/-H[:MM].

You or another administrator took the cluster out of service (or busied out the cluster, and now all calls and conferences have ended).

An out-of-service cluster is still running and accessible via the management interface, but doesn't accept any calls or registrations.

Click the link to go to the **RealPresence DMAs** page.

See also:

Alerts on page 342

Alert 1003

Cluster <cluster> is orphaned.

The replication link with the specified cluster seems to be corrupted.

Click the link to go to the **RealPresence DMAs** page. Try removing that cluster from the supercluster and then rejoining.

See also:

Alerts on page 342

Alert 1004

No heartbeats from cluster <cluster>. Last heartbeat received YYYY-MM-DD HH:MM GMT+/-H[:MM].

The specified cluster is not sending scheduled heartbeats. Possible reasons include:

- The cluster may simply be very busy and have fallen behind in sending heartbeats.
- An internal process could be stuck.
- The server(s) may be offline or rebooting.
- There may be a network problem.

Click the link to go to the **RealPresence DMAs** page.

See also:

Alerts on page 342

Alert 1103

No clusters assigned to <list of territories>.

The specified territory or territories are not assigned to a cluster, so any responsibilities assigned to the territories are not being fulfilled.

Click the link to go to the **Territories** page. Assign a primary and backup cluster for every territory in your site topology.

See also:

Alerts on page 342

Alert 1105

<alerting-cluster>: Primary cluster <p-cluster> and backup cluster <b-cluster> are not reachable. Territory <territory> may not be functioning.

The cluster from which the alert originated is unable to communicate with the specified territory's primary and backup clusters.

This may be a temporary problem, in which case this alert will be cleared as soon as the alerting cluster is once again able to communicate with the clusters in question.

If this alert reoccurs frequently but quickly goes away, that suggests intermittent spurious network problems. If it persists for more than about 15-30 seconds, it may indicate serious network problems. It's also possible that someone shut both clusters down, or shut down one and the other then failed, or both failed (unlikely).

Click the link to go to the **Territories** page. To enable conferencing to continue in the territory (at diminished capacity), assign it to some other cluster.

See also:

Alerts on page 342

Alert 1106

<alerting-cluster>: Cluster <cluster> is not reachable. Territory <territory> may not be functioning.

The cluster from which the alert originated is unable to communicate with the specified territory's primary cluster, and there is no backup cluster.

This may be a temporary problem, in which case this alert will be cleared as soon as the alerting cluster is once again able to communicate with the cluster in question.

If this alert reoccurs frequently but quickly goes away, that suggests intermittent spurious network problems. If it persists for more than about 15-30 seconds, it may indicate serious network problems. It's also possible that someone shut the cluster down or that it failed.

Click the link to go to the **Territories** page. To enable conferencing to continue in the territory (at diminished capacity), assign it to some other cluster.

We recommend assigning a backup cluster for each territory.

See also:

Alerts on page 342

Alert 1107

<alerting-cluster>: Primary cluster <p-cluster> associated with territory <territory> is not reachable. But backup cluster <b-cluster> is reachable.

The cluster from which the alert originated is unable to communicate with the specified territory's primary cluster, but can communicate with the backup cluster.

This may be a temporary problem, in which case this alert will be cleared as soon as the alerting cluster is once again able to communicate with the cluster in question.

If this alert reoccurs frequently but quickly goes away, that suggests intermittent network problems. If it persists, it will be followed by Alert 1108, indicating that the territory has failed over to the backup cluster. The backup cluster allows conferencing to continue in the territory (at diminished capacity) and fulfills any other responsibilities assigned to the territory.

Click the link to go to the **Territories** page. Determine whether the cluster was deliberately shut down. If not, try pinging the cluster's IP addresses.

If this is a two-server cluster, and you can't ping either the virtual or physical IP addresses, look for a network problem. It's unlikely that both servers have failed simultaneously.

If you can ping the cluster, the OS is running, but the application may be in a bad state. Try rebooting the server(s).

See also:

Alerts on page 342

Alert 1108

<alerting-cluster>: Territory <territory> has failed over from <p-cluster> to <b-cluster>.

The territory's primary cluster is unreachable, and its backup cluster has taken over.

This may indicate a network problem. It's also possible that someone shut the cluster down or that it failed.

The backup cluster allows conferencing to continue in the territory (at diminished capacity) and fulfills any other responsibilities assigned to the territory.

Click the link to go to the **Territories** page. Determine whether the cluster was deliberately shut down. If not, try pinging the cluster's IP addresses.

If this is a two-server cluster, and you can't ping either the virtual or physical IP addresses, look for a network problem. It's unlikely that both servers have failed simultaneously.

If you can ping the cluster, the OS is running, but the application may be in a bad state. Try rebooting the server(s).

See also:

Alerts on page 342

Alert 2001

<formatted string from server>

An error occurred when the cluster responsible for RealPresence Resource Manager or CMA integration tried to synchronized data with the Polycom RealPresence Resource Manager or CMA system. The alert text describes the nature of the problem, which may require remedial action on the Polycom RealPresence Resource Manager or CMA system.

See also:

Alerts on page 342

Alert 2002

Resource management system <system-name> unreachable. Last contact on: YYYY-MM-DD HH:MM GMT+/-H[:MM].

The cluster responsible for RealPresence Resource Manager or CMA integration was unable to connect to the Polycom RealPresence Resource Manager or CMA system.

This may indicate a network problem or a problem with the Polycom RealPresence Resource Manager or CMA system.

Try logging into the Polycom RealPresence Resource Manager or CMA system. If you can do so, make sure the login credentials that the RealPresence DMA system uses to connect to it are still valid.

See also:

Alerts on page 342

Alert 2004

Resource management system <system-name> has inconsistent territory definitions in its site topology.

The system is integrated with a Polycom RealPresence Resource Manager or CMA system, and there is a problem with the territory definitions or responsibility assignments in the site topology data imported from that system.

On the Polycom RealPresence Resource Manager or CMA system, configure territories properly (for instance, no duplicate names) and in way that meets the needs of the RealPresence DMA system. Assign responsibilities (primary and backup) for the territories to the appropriate RealPresence DMA clusters. A territory can only host conference rooms if it's assigned to a RealPresence DMA cluster.

See also:

Alerts on page 342

Alert 2101

Active Directory integration was not successful on cluster <cluster>.

The cluster responsible for Active Directory integration was unable to update the cache of user and group data.

This may indicate a network problem or a problem with the AD.

If the cluster was unable to log into the AD server, alert 2107 is also generated.

Click the link to go to the **Microsoft Active Directory** page and check the **Active Directory Connection** section.

See also:

Alerts on page 342

Alert 2102

Zero enterprise conference rooms exist on cluster <cluster>.

The cluster responsible for Active Directory integration successfully retrieved user and group data, but no conference rooms were generated.

This may indicate that no directory attribute was specified from which to generate conference room IDs, or that the chosen attribute resulted in empty (null) conference room IDs after the system removed the characters to remove.

Click the link to go to the **Microsoft Active Directory** page and check the **Enterprise Conference Room ID Generation** section. If necessary, check the Active Directory and determine an appropriate directory attribute to use.

See also:

Alerts on page 342

Alert 2104

Active Directory service is not available. Both primary cluster <p-cluster> and backup cluster <b-cluster> are not operational.

The primary and backup cluster for the territory responsible for Active Directory integration are both unreachable.

This may indicate serious network problems. It's also possible that someone shut both clusters down, or shut down one and the other then failed, or both failed (unlikely).

Click the link to go to the **RealPresence DMAs** page to begin troubleshooting. Determine whether the clusters were deliberately shut down. If not, try pinging the clusters' IP addresses.

Other clusters can continue using the shared data store from the last cache update, so there is no immediate AD-related problem. But the unavailable clusters probably have other territory-related responsibilities (Conference Manager and/or Call Server), so you may need to assign the affected territory to some other cluster(s).

See also:

Alerts on page 342

Alert 2105

Active Directory service is not available. Cluster <p-cluster> is not operational.

The primary cluster for the territory responsible for Active Directory integration is unreachable, and it has no backup cluster.

This may indicate a network problem. It's also possible that someone shut the cluster down or that it failed.

Click the link to go to the **RealPresence DMAs** page to begin troubleshooting. Determine whether the cluster was deliberately shut down. If not, try pinging the cluster's IP addresses.

Other clusters can continue using the shared data store from the last cache update, so there is no immediate AD-related problem. But the unavailable cluster probably has other territory-related responsibilities

(Conference Manager and/or Call Server), so you may need to assign the affected territory to some other cluster.

We recommend assigning a backup cluster for each territory.

See also:

Alerts on page 342

Alert 2106

Cluster <cluster>: Failed connection from <server> to Active Directory for user authentications at YYYY-MM-DD HH:MM GMT+/-H[:MM].

The specified server tried to connect to the Active Directory in order to authenticate a user's credentials and was unable to do so. This may indicate a network problem or a problem with the AD itself.

If the network and the AD itself both appear to be OK, the connection attempt may have failed because the cluster was unable to log into the AD server.

Click the link to go to the **Microsoft Active Directory** page. Make sure the login credentials that the RealPresence DMA system uses to connect to Active Directory are still valid and update them if necessary.

See also:

Alerts on page 342

Alert 2107

Failed connection from <cluster> to Active Directory for caching at YYYY-MM-DD HH:MM GMT+/-H[:MM].

The cluster responsible for Active Directory integration was unable to log into the AD server.

Click the link to go to the **Microsoft Active Directory** page.

See also:

Alerts on page 342

Alert 2201

Exchange server integration primary cluster <p-cluster> is not operational. Integration by backup cluster <b-cluster>.

The primary cluster for the territory responsible for Exchange server integration is unreachable, and its backup cluster has taken over responsibility for monitoring the Polycom Conferencing user mailbox and accepting or declining the meeting invitations received.

This may indicate a network problem. It's also possible that someone shut the cluster down or that it failed.

Click the link to go to the **RealPresence DMAs** page to begin troubleshooting.

See also:

Alerts on page 342

Alert 2202

Exchange server integration is not available. Both primary cluster <p-cluster> and backup cluster <b-cluster> are not operational.

The primary and backup clusters for the territory responsible for Exchange server integration are both unreachable.

This may indicate serious network problems. It's also possible that someone shut both clusters down, or shut down one and the other then failed, or both failed (unlikely).

Click the link to go to the **RealPresence DMAs** page to begin troubleshooting. Determine whether the clusters were deliberately shut down. If not, try pinging the clusters' IP addresses.

See also:

Alerts on page 342

Alert 2203

Exchange server integration is not available. Cluster <p-cluster> is not operational.

The primary cluster for the territory responsible for Exchange server integration is unreachable, and it has no backup cluster.

This may indicate a network problem. It's also possible that someone shut the cluster down or that it failed.

Click the link to go to the **RealPresence DMAs** page to begin troubleshooting.

See also:

Alerts on page 342

Alert 2401

Connection to the history/audit database for cluster <cluster> has failed.

The specified cluster is unable to communicate with its shared call history database. This may indicate a network problem, or a software failure within the cluster. The server(s) may need to be rebooted.

Go to the **DMAs** page to begin troubleshooting.

See also:

Alerts on page 342

Alert 2402

Connection to the configuration database for cluster <cluster> has failed.

The specified cluster is unable to communicate with its shared configuration database. This may indicate a network problem, or a software failure within the cluster. The server(s) may need to be rebooted.

Go to the **DMAs** page to begin troubleshooting.

See also:

Alerts on page 342

Alert 2601

<cluster>: Cannot reach Lync server <lyncserver> for presence publishing.

The cluster cannot communicate with the specified Lync server at the currently configured **Next hop address**. This could indicate a network problem, or a problem with the Lync server.

Click the link to go to the **Network > External SIP Peers** page to begin troubleshooting. Try to ping the Lync server's **Next hop address** to verify basic connectivity.

See also:

Alerts on page 342

Alert 2602

<cluster>: Cannot authenticate with <lyncserver> for presence publishing.

The cluster cannot authenticate with the specified Lync server; presence will not be published for Polycom conference contacts.

This could indicate incorrect RealPresence DMA system or Lync server configuration.

Click the link to go to the **Network > External SIP Peers** page to begin troubleshooting. Verify that the **Next hop address**, **Port**, and **Transport type** settings on this page are correct.

See also:

Alerts on page 342

Alert 2603

<cluster>: Invalid Lync account URI configured for Lync server <lyncserver>.

The system is unable to authenticate with the Lync server using the currently configured Lync account URI.

Click the link to go to the **Network > External SIP Peers** page to begin troubleshooting. Try reentering the **Lync account URI** for the Lync server in the **External SIP Peer** configuration area.

See also:

Alerts on page 342

Alert 2604

<cluster>: Cannot reach Lync server <lyncserver> to resolve conference IDs.

The system is unable to connect to the specified Lync server at the currently configured **Next hop address**. Attempts to connect to a Lync conference through the RealPresence DMA system will fail.

This could indicate a network problem, or that someone has shut down the Lync server.

Click the link to go to the **Network > External SIP Peers** page to begin troubleshooting. Try pinging the specified Lync server's IP address. If it is reachable, verify that the **Next hop address**, **Port**, and **Transport type** settings on this page are correct.

See also:

Alerts on page 342

Alert 2605

<cluster>: Cannot authenticate with <lyncserver> to resolve conference IDs.

The system can't authenticate with the specified Lync server, preventing Lync conference ID resolution. Attempts to connect to a Lync conference through the RealPresence DMA system will fail.

Click the link to go to the **Network > External SIP Peers** page to begin troubleshooting. Verify that the **Transport Type** is set to **TLS**, and that the **Lync account URI** on the **Lync Integration** tab is correct. If the RealPresence DMA system configuration is correct, investigate the Lync server's configuration.

See also:

Alerts on page 342

Alert 3001

No signaling interface is enabled for cluster <cluster>. SIP or H.323 must be configured to allow calls.

The specified cluster has neither H.323 nor SIP signaling enabled and is unable to accept calls.

To use the cluster for anything other than logging into the management interface, you must enable signaling.

If you're logged into that cluster, click the link to go to the **Signaling Settings** page. If not, log into that cluster and go to **Admin > Local Cluster > Signaling Settings**.

See also:

Alerts on page 342

Alert 3101

Cluster <cluster>: The server certificate has expired.

The specified cluster's server certificate has expired. This is the public certificate that the cluster uses to identify itself to devices configured for secure communication. The cluster can no longer communicate with any such devices, including MCUs, endpoints, the AD server, and the Exchange server.

If you're logged into that cluster, click the link to go to the **Certificates** page. If not, log into that cluster (your browser will warn you not to do this, and you'll have to override its advice) and go to **Admin > Local Cluster > Certificates**.

See also:

Alerts on page 342

Alert 3102

Cluster <cluster>: The server certificate will expire within 1 day. All system access may be lost.

The specified cluster's server certificate is about to expire. This is the public certificate that the cluster uses to identify itself to devices configured for secure communication. If you allow it to expire, the cluster will no longer be able to communicate with any such devices, including MCUs, endpoints, the AD server, and the Exchange server.

If you're logged into that cluster, click the link to go to the **Certificates** page. If not, log into that cluster and go to **Admin > Local Cluster > Certificates**.

See also:

Alerts on page 342

Alert 3103

Cluster <cluster>: The server certificate will expire within <count> days. All system access may be lost.

The specified cluster's server certificate will soon expire. This is the public certificate that the cluster uses to identify itself to devices configured for secure communication. If you allow it to expire, the cluster will no longer be able to communicate with any such devices, including MCUs, endpoints, the AD server, and the Exchange server.

If you're logged into that cluster, click the link to go to the **Certificates** page. If not, log into that cluster and go to **Admin > Local Cluster > Certificates**.

See also:

Alerts on page 342

Alert 3104

Cluster <cluster>: One or more CA certificates have expired.

The specified cluster has an expired CA certificate or certificates. When a CA certificate expires, the certificates signed by that certificate authority are no longer accepted. Depending on its security settings, the cluster may refuse connections from devices presenting a certificate signed by a CA whose certificate has expired, including MCUs, endpoints, the AD server, and the Exchange server.

If you're logged into that cluster, click the link to go to the **Certificates** page. If not, log into that cluster and go to **Admin > Local Cluster > Certificates**.

If that cluster has **Skip certificate validation for user login sessions** turned off, you won't be able to log into it. Contact Polycom Global Services.

See also:

Alerts on page 342

Alert 3105

Cluster <cluster>: One or more CA certificates will expire within 30 days.

The specified cluster has a CA certificate or certificates that will expire soon. When a CA certificate expires, the certificates signed by that certificate authority are no longer accepted. If you allow the CA certificate(s) to expire, depending on its security settings, the cluster may refuse connections from any devices presenting a certificate signed by a CA whose certificate has expired, including MCUs, endpoints, the AD server, and the Exchange server.

If you're logged into that cluster, click the link to go to the **Certificates** page. If not, log into that cluster and go to **Admin > Local Cluster > Certificates**.

See also:

Alerts on page 342

Alert 3201

Cluster <cluster> has no license key(s). System will allow up to 10 concurrent calls.

You haven't entered the license key(s) for the specified cluster.

If you're logged into that cluster, click the link to go to the **Licenses** page. If not, log into that cluster and go to **Admin > Local Cluster > Licenses**.

Without a valid license, the cluster is limited to ten simultaneous calls.

See also:

Alerts on page 342

Alert 3202

Invalid license key(s) applied to cluster <cluster>. System will allow up to 10 concurrent calls.

The specified cluster has an invalid license key or keys.

If you're logged into that cluster, click the link to go to the **Licenses** page. If not, log into that cluster and go to **Admin > Local Cluster > Licenses**.

Without a valid license, the cluster is limited to ten simultaneous calls.

See also:

Alerts on page 342

Alert 3203

The EULA for cluster <cluster> has not been accepted. All calls are blocked on this cluster.

The system version has changed, and the End User License Agreement has not yet been accepted. The specified cluster won't accept any inbound calls, or place outbound calls, until a user with Administrator privileges accepts the agreement upon login.

Click the link to go to the **Licenses** page, where you can view the EULA acceptance status and details.

See also:

Alerts on page 342

Alert 3204

Cannot connect to licensing server <lserver> for <cluster>.

The specified cluster cannot connect to the licensing server, or there is no licensing server configured for this cluster.

If you're logged into that cluster, click the link to go to the **Licenses** page to view licensing details. If not, log into that cluster and go to **Admin > Local Cluster > Licenses**.

See also:

Alerts on page 342

Alert 3205

DMA version is incompatible with license. No calls are permitted.

This cluster's version of software is not compatible with the installed license. The system will not permit calls until a license that has been activated for this version of software is installed.

Click the link to go to the **Licenses** page to install the proper license activation key.

See also:

Alerts on page 342

Alert 3206

DMA is not licensed for any calls.

The current license does not include the ability to make calls.

Click the link to go to the **Licenses** page to view licensing details or install a different license activation key.

See also:

Alerts on page 342

Alert 3301

Cluster <cluster> is configured for 2 servers, but only a single server is detected.

One of the servers in the specified cluster is not responding to the other server over the private network that connects them.

This could be a hardware problem, or the server in question may just need to be rebooted. It's also possible that the private network connection between the two servers has failed. Check the ethernet cable connecting the GB2 ports and replace it if necessary.

See also:

Alerts on page 342

Alert 3302

Cluster <cluster> is configured for 1 server, but the private network interface is enabled and active.

Either the cluster contains two servers but was misconfigured as a single-server cluster, or there is only one server in the cluster but something is connected its GB2 port.

On a single-server cluster, don't use the server's GB2 port for anything.

See also:

Alerts on page 342

Alert 3303

Cluster <cluster>: A private network error exists on <server>.

The specified server has detected a problem with the private network that connects the two servers in the cluster.

This could be a problem with the GB2 port (eth1 interface) or the ethernet cable connecting the GB2 ports. Or the server in question may just need to be rebooted.

See also:

Alerts on page 342

Alert 3304

Cluster <cluster>: A public management network error exists on <server>.

The specified server has detected a problem with the management (or combined management and signaling) network connection.

This could be a problem with the GB1 port (eth0 interface), the ethernet cable connecting the server to the enterprise network switch, or that switch. Or the server in question may just need to be rebooted.

See also:

Alerts on page 342

Alert 3305

Cluster <cluster>: A public signaling network error exists on <server>.

The specified server has detected a problem with the signaling network connection.

This could be a problem with the GB3 port (eth2 interface), the ethernet cable connecting the server to the enterprise network switch, or that switch. Or, the server in question may just need to be rebooted.

See also:

Alerts on page 342

Alert 3306

DNS <address of DNS server> settings are inconsistent with network configuration on Cluster <cluster>: <issue-text>. (FTL20281)

The system has found issues with the DNS configuration on the **Admin > Local Cluster > Network Settings** page for the specified cluster. This could indicate one of the following possible problems:

- The virtual or management host name A or AAAA record configured in the specified DNS server is missing
- The virtual or management host name A or AAAA record configured in the specified DNS server references the incorrect address

The alert text describes the nature of the problem, which may require additional configuration of the DNS server(s) or network settings for the cluster.

Refer to Chapter 2 of the *Polycom RealPresence DMA 7000 System Operations Guide* for more information regarding DNS configuration.

Click the link to go to the **Admin > Local Cluster > Network Settings** page.

See also:

Alerts on page 342

Add Required DNS Records for the Polycom RealPresence DMA System on page 30

Alert 3309

<cluster>: DNS <address of DNS server> is unresponsive. <service> at <FQDN> <referenced by> {will use <IP address> | cannot be reached}.

One or more configured DNS servers are not responding to requests from the specified cluster. The system will use the last cached IP address for the DNS server, but if no IP address is known, this DNS server is considered unreachable.

This could indicate a network problem, or that a DNS server is out of service.

Click the link to go to the **Admin > Local Cluster > Network Settings** page.

See also:

Alerts on page 342

Alert 3310

<cluster>: DNS <address of server> cannot resolve <FQDN>. <service> <referenced by> cannot be reached.

The specified cluster can't resolve the domain name of this Active Directory, MCU, ISDN gateway, or DMA cluster. The specified service is currently unreachable.

This could indicate a network problem, or that the specified domain name entry is incorrect in the DMA cluster's configuration.

If the alert is originating from a different cluster, log in to that cluster and go to the **Admin > Local Cluster > Network Settings** page to begin troubleshooting. If you are already logged in to the originating cluster, click the link to go to the **Admin > Local Cluster > Network Settings** page.

See also:

Alerts on page 342

Alert 3401

Cluster <cluster>: Available disk space is less than 15% on server <server>.

The specified cluster is running out of disk space.

Suggestions for recovering and conserving disk space include:

- Delete backup files (after downloading them).
- Remove upgrade packages.
- History data is written to the backup file nightly. Reduce history retention settings so the same history data isn't being repeatedly backed up.
- Roll logs more often (compressing the data) and make sure **Logging level** is set to **Production**.

See also:

Alerts on page 342

Alert 3403

Cluster <cluster>: Log files on server <server> exceed the capacity limit and will be purged within 24 hours.

Log archives on the specified cluster exceed the 14 GB capacity limit for logs. After midnight, the system will delete sufficient log archives to get below the 14 GB limit.

Click the link to go to the **System Log Files** page. We recommend routinely downloading archived logs and then deleting them from the system.

See also:

Alerts on page 342

Alert 3404

Cluster <cluster>: Log files on server <server> are close to capacity limit and may be purged within 24 hours.

Log archives on the specified cluster have reached the percentage of capacity that triggers an alert, set on the **Alerting Settings** page.

Click the link to go to the **System Log Files** page. We recommend routinely downloading archived logs and then deleting them from the system.

See also:

Alerts on page 342

Alert 3405

Server <server> CPU utilization >50% and <75%.

The specified server's CPU and/or I/O bandwidth usage is unusually high.

This can be caused by activities such as backup creation, CDR downloading, logging at too high a level, or refreshing an extremely large Active Directory cache.

The cause may also be a system health problem or a runaway process. Go to **Maintenance > Troubleshooting Utilities > Top** to see if a process is monopolizing CPU resources.

Create a new backup and download it, and then contact Polycom Global Services.

See also:

Alerts on page 342

Alert 3406

Server <server> CPU utilization > 75%.

The specified server's CPU and/or I/O bandwidth usage is exceptionally high.

This can be caused by activities such as backup creation, CDR downloading, logging at too high a level, or refreshing an extremely large Active Directory cache.

The cause may also be a system health problem or a runaway process. Go to **Maintenance > Troubleshooting Utilities > Top** to see if a process is monopolizing CPU resources.

Create a new backup and download it, and then contact Polycom Global Services.

See also:

Alerts on page 342

Alert 3601

Cluster <cluster>: System version differs between servers.

The specified cluster is supposed to have two servers, but a software version mismatch makes it impossible for them to form a redundant two-server cluster.

Possible explanations:

- Someone upgraded one server of the cluster while the other was turned off or otherwise unavailable.
- An expansion server was added to a single-server cluster, but the new server wasn't patched to the same software level as the existing server.
- An RMA replacement server wasn't patched to the same software level as the existing server.

If you're logged into that cluster, click the link to go to the **Software Upgrade** page. If not, log into that cluster and go to **Maintenance > Software Upgrade**. Check **Operation History**.

Log into the physical address of the server that was unable to join the cluster and upgrade it to match the other server. After it restarts, it will join the cluster.

See also:

Alerts on page 342

Alert 3602

Cluster <cluster>: Local time differs by more than ten seconds between servers.

The time on the two servers in the specified cluster has drifted apart by an unusually large amount. This may indicate a configuration issue or a problem with one of the servers. Contact Polycom Global Services.

See also:

Alerts on page 342

Alert 3603

Cluster <cluster>: Active Directory integration is not consistent between servers.

In the specified cluster, the Active Directory integration status information is different on the two servers, indicating that their internal databases aren't consistent.

Try to determine which server's data is incorrect and reboot it.

See also:

Alerts on page 342

Alert 3604

Cluster <cluster>: Enterprise conference rooms differ between servers.

In the specified cluster, the enterprise conference room counts are different on the two servers, indicating that their internal databases aren't consistent.

Try to determine which server's data is incorrect and reboot it.

See also:

Alerts on page 342

Alert 3605

Cluster <cluster>: Custom conference rooms differ between servers.

In the specified cluster, the custom conference room counts are different on the two servers, indicating that their internal databases aren't consistent.

Try to determine which server's data is incorrect and reboot it.

See also:

Alerts on page 342

Alert 3606

Cluster <cluster>: Local users differ between servers.

In the specified cluster, the local users are different on the two servers, indicating that their internal databases aren't consistent.

Try to determine which server's data is incorrect and reboot it.

See also:

Alerts on page 342

Alert 3801

<d-cluster>: Cluster <f-cluster>/server <f-server> failover to <b-server> due to <component> failure: <details of failure>

The cluster from which the alert originated is reporting that a server in a different cluster has failed over to an alternate server because of an internal software component failure. The alert includes details on what component experienced the failure.

This alert is cleared when the condition that caused the alert is resolved.

Use the failure details as a starting point for troubleshooting. If the failure is not hardware or network related, and you are unable to access the server, it may need to be rebooted.

Click the link to go to the **Network > DMAs** page.

See also:

Alerts on page 342

Alert 3802

<d-cluster>: Cluster <f-cluster>/server <f-server> shutdown due to <component> failure: <details of failure>

The cluster from which the alert originated is reporting that a server in a different cluster has shut down because of an internal component failure. The alert includes details on what component experienced the failure.

Use the failure details as a starting point for troubleshooting. If the failure is not hardware or network related, and you are unable to access the server, it may need to be rebooted.

Click the link to go to the **Network > DMAs** page.

See also:

Alerts on page 342

Alert 3803

<d-cluster>: Cluster <f-cluster>/server <f-server> is operating in an impaired state due to <component> failure: <details of failure>

The cluster from which the alert originated is reporting that a server in a different cluster has experienced one or more software component failures, and is running in an unhealthy state. The alert includes details on what component experienced the failure.

Use the failure details as a starting point for troubleshooting. If the failure is not hardware or network related, and you are unable to access the server, it may need to be rebooted.

Click the link to go to the **Network > DMAs** page.

See also:

Alerts on page 342

Alert 4001

MCU <MCUname> is currently busied out.

Someone busied out the specified MCU.

Click the link to go to the **Network > MCU > MCUs** page.

See also:

Alerts on page 342

Alert 4002

MCU <MCUname> is currently out of service.

Someone took the specified MCU out of service.

Click the link to go to the **Network > MCU > MCUs** page.

See also:

Alerts on page 342

Alert 4003

MCU <MCUname> has <count> warning(s).

The **MCUs** page is displaying warnings related to the specified MCU.

Click the link to go to the **Network > MCU > MCUs** page for more information.

See also:

Alerts on page 342

Alert 4004

MCU <MCUname> is configured with insufficient user connections.

The system was unable to establish an additional management session connection to the specified MCU.

Possible explanations:

- IP connectivity between the system and the MCU has been lost.
- This MCU doesn't allow sufficient connections per user.

Polycom MCUs use synchronous communications. In order to efficiently manage multiple calls as quickly as possible, the Polycom RealPresence DMA system uses multiple connections per MCU. By default, a RealPresence Collaboration Server or RMX MCU allows up to 20 connections per user (the MAX_NUMBER_OF_MANAGEMENT_SESSIONS_PER_USER system flag). We recommend not reducing this setting. If you have a RealPresence DMA supercluster with three Conference Manager clusters and a busy conferencing environment, we recommend increasing this value to 30.

After a connection attempt fails and this alert is triggered, the system tries every 60 seconds to establish 5 connections to this MCU. If it succeeds, this alert is automatically cleared.

Click the link to go to the **Network > MCU > MCUs** page.

See also:

Alerts on page 342

Alert 4005

MCU <MCUname> disconnected.

The reporting cluster is unable to connect to the specified MCU.

This may indicate a network problem. It's also possible that someone shut the MCU down or that it failed.

Click the link to go to the **Network > MCU > MCUs** page for more information.

See also:

Alerts on page 342

Alert 4009

MCU <mcu> disconnect rate is > 1 and < 4.

The RealPresence DMA cluster has lost connection with the specified MCU between one and four times in the past 24 hours.

This most likely indicates a network problem, but it could also indicate that the MCU or RealPresence DMA system is under very heavy load. If the MCU stays connected for more than 24 hours, this alert is cleared, but if the RealPresence DMA system loses connection with this MCU more than 4 times in 24 hours, this alert is replaced with Alert 4010.

Click the link to go to the **Network > MCU > MCUs** page to begin troubleshooting. Check the network connection between this MCU and the RealPresence DMA cluster.

See also:

Alerts on page 342

Alert 4010

MCU <mcu> disconnect rate is > 4.

The DMA cluster has lost connection with the specified MCU more than four times in the past 24 hours.

This most likely indicates a network problem, but it could also indicate that the MCU or RealPresence DMA system is under very heavy load.

Click the link to go to the **Network > MCU > MCUs** page to begin troubleshooting. Check the network connection between this MCU and the RealPresence DMA cluster.

See also:

Alerts on page 342

Alert 4011

MCU <mcu> call failure rate is > 0.4 and < 0.8.

The specified MCU's number of consecutive failed calls has changed, and the calculated failure rate metric is now between 0.4 (some calls are failing) and 0.8 (most calls are failing).

The RealPresence DMA system keeps track of per-MCU call failure rates not only to alert administrators to call failures, but also to ensure that calls will be routed less often to MCUs with high call failure rates. See MCU Availability and Reliability Tracking on page 148 for more information.

Click the link to go to the **Network > MCU > MCUs** page to begin troubleshooting.

See also:

Alerts on page 342

Alert 4012

MCU <mcu> call failure rate is > 0.8.

The specified MCU's number of consecutive failed calls has changed, and the calculated failure rate metric is now above 0.8.

This indicates that most of the specified MCU's calls are failing. The RealPresence DMA system keeps track of per-MCU call failure rates not only to alert administrators to call failures, but also to ensure that calls will be routed less often to MCUs with high call failure rates. See MCU Availability and Reliability Tracking on page 148 for more information.

Click the link to go to the **Network > MCU > MCUs** page to begin troubleshooting.

See also:

Alerts on page 342

Alert 4013

MCU <mcu> is connected with no port capacity.

The specified MCU has no ports available for call traffic.

This could indicate that the specified MCU is at capacity, or possibly a network problem. This alert appears as soon as the port capacity of this MCU becomes 0, and is automatically cleared after two minutes.

Click the link to go to the **Network > MCU > MCUs** page to begin troubleshooting.

See also:

Alerts on page 342

Alert 4014

MCU <mcu> video port capacity changed from <oldcapacity> to <newcapacity>.

The video port capacity of the specified MCU has changed.

This could indicate a license change, video / voice port configuration change, or hardware change for the MCU (perhaps a media card has been removed or added). This alert appears as soon as the video port capacity of this MCU becomes 0, and is automatically cleared after two minutes.

Click the link to go to the **Network > MCU > MCUs** page.

See also:

Alerts on page 342

Alert 4015

MCU <mcu> voice port capacity changed from <oldcapacity> to <newcapacity>.

The voice port capacity of the specified MCU has changed.

This could indicate a license change, video / voice port configuration change, or hardware change for the MCU (perhaps a media card has been added or removed). This alert appears as soon as the voice port capacity of this MCU becomes 0, and is automatically cleared after two minutes.

Click the link to go to the **Network > MCU > MCUs** page.

See also:

Alerts on page 342

Alert 5001

<Model> ITP system attempting to register with ID <H.323 ID or SIP user name> is improperly configured.

A device that identifies itself as an ITP (Immersive Telepresence) system has registered with the Call Server, but the H.323 ID or SIP user name of the device doesn't specify its endpoint number or the number of endpoints in the ITP system, as it should.

The H.323 ID or SIP user name must be updated on the endpoints of the ITP system. See Naming ITP Systems Properly for Recognition by the Polycom RealPresence DMA System on page 95.

See also:

Alerts on page 342

Alert 5002

One or more endpoints is sending too much H.323 signaling traffic, has been temporarily blacklisted, and may have been quarantined.

At least one device, in violation of the H.323 standard, is sending GRQ (gatekeeper request) or RRQ (registration request) messages several times a second.

If there are many such ill-behaved devices, it could affect the RealPresence DMA system's ability to provide service, so the system temporarily blacklists any such device (ignoring all signaling from it until it stops sending messages more frequently than the specification permits). If the device is or was registered, it's also quarantined, and it remains so until manually removed from quarantine.

Click the link to go to the **Network > Endpoints** page, where you can search for endpoints with **Registration status** of **Quarantined** or **Quarantined (Inactive)**.

See also:

Alerts on page 342

Alert 5003

The <device model> device identified by [<device identifier>] is no longer registered to the call server.

The specified device has unregistered or its registration has expired. This informational alert appears only if it's been enabled for this endpoint or MCU (see Edit Device Dialog Box on page 97, Edit Devices Dialog Box on page 98, or Edit MCU Dialog Box on page 133). This alert is automatically cleared after two minutes.

Click the link to go to the **Endpoints** page.

See also:

Alerts on page 342

Alert 6001

No territories configured to host conference rooms.

You must enable a territory to host conference rooms in order to use the cluster responsible for the territory as a Conference Manager. You can enable up to three territories to host conference rooms.

Click the link to go to the **Network > Site Topology > Territories** page.

See also:

Alerts on page 342

Alert 6002

Shared number dialing VEQ <VEQnum> references entry queue <EQname> which is not configured on any MCUs.

The specified entry queue used by the VEQ <VEQnum> is not configured on an MCU. If the VEQ is a Direct Dial VEQ, <VEQnum> is “Direct Dial”.

Click the link to go to **Admin > Conference Manager > Shared Number Dialing / <VEQ>** to begin troubleshooting. Ensure that at least one MCU configured in **Network > MCU > MCUs** has the specified entry queue configured. See Shared Number Dialing on page 220.

See also:

Alerts on page 342

Alert 6101

Call failed: Preset dialout from conference VMR <VMR> to <destination> failed. Cause: <cause>

A preset dialout from the conference using the conference room identifier <VMR> has failed for the specified reason. This alert automatically clears after two minutes.

Click the link to go to the **Network > Users** page to find the specified VMR number and begin troubleshooting.

See also:

Alerts on page 342

Alert 6102

Conference <VMR> on MCU <MCU> failed to start: <reason>.

A conference using the conference room identifier <VMR> has failed to start for the specified reason. If no MCU was selected, <MCU> is “unresolved”. This alert automatically clears after two minutes.

Click the link to go to the **Network > Users** page to find the specified VMR number and begin troubleshooting.

See also:

Alerts on page 342

Alert 6103

Ongoing conference <VMR> on MCU <MCU> failed: <reason>.

A conference using the conference room identifier <VMR> has been aborted for the specified reason. This alert automatically clears after two minutes.

Click the link to go to the **Network > Users** page to find the specified VMR number and begin troubleshooting.

See also:

Alerts on page 342

Alert 6104

Ongoing conference <VMR> on MCU <MCU1> failed over to MCU <MCU2>: <reason>.

A conference using the conference room identifier <VMR> has been moved from <MCU1> to <MCU2> for the specified reason. This alert automatically clears after two minutes.

Click the link to go to the **Network > Users** page to find the specified VMR number and begin troubleshooting.

See also:

Alerts on page 342

Alert 6201

<cluster>: Errors in presence publication for Lync server <lyncserver>. Presence for <NN> of <MM> Polycom conference contacts will not be published due to Lync server configuration ‘MaxEndpointExpiration’ value <expire>.

The system was unable to publish presence status for the specified number of Polycom conference contacts because the Lync server has been configured with a maximum endpoint logon period of <expire> seconds.

To publish presence status for Polycom conference contacts, the RealPresence DMA system registers each contact with the Lync server every ‘MaxEndpointExpiration’ seconds. Depending on how many conference contacts are configured for presence publishing, the RealPresence DMA system may be unable to publish presence for all contacts during this interval, as the system registers one conference contact per second.

If suitable for your environment, either increase the ‘MaxEndpointExpiration’ value on the Lync server, or decrease the number of Polycom conference contacts configured for publishing.

Click the link to go to the **Network > External SIP Peers** page.

See also:

Alerts on page 342

Alert 6202

<cluster>: Errors in presence publication for Lync server <lyncserver>. Presence for <NN> of <MM> Polycom conference contacts will not be published because the number of Polycom conference contacts configured for publishing exceeds ‘Maximum Polycom conference contacts to publish’ configured on the system.

The system was unable to publish presence status for the specified number of Polycom conference contacts because the **Maximum Polycom conference contacts to publish** value configured in the Lync server’s **External SIP Peer** properties has been reached.

Click the link to go to the **Network > External SIP Peers** page to begin troubleshooting. If suitable for your environment, increase the **Maximum Polycom conference contacts to publish** value.

See also:

Alerts on page 342

Alert 6203

<cluster>: Errors in presence publication for Lync server <lyncserver>. Presence for <NN> of <MM> Polycom conference contacts will not be published: the system is unable to complete publication within the expiration interval.

The system was unable to publish presence status for the specified number of Polycom conference contacts within the number of seconds specified by the ‘MaxEndpointExpiration’ setting on the Lync server.

To publish presence status for Polycom conference contacts, the RealPresence DMA system registers each contact with the Lync server every ‘MaxEndpointExpiration’ seconds. This alert could indicate heavy RealPresence DMA system load or other performance-related factors during presence publishing.

If suitable for your environment, either increase the ‘MaxEndpointExpiration’ value on the Lync server, or decrease the number of Polycom conference contacts configured for publishing.

Click the link to go to the **Network > External SIP Peers** page.

See also:

Alerts on page 342

Alert 7001

Failed registration data incomplete: <cluster> history limited to <n.n> hours.

Registration data retention settings are too low for the system to determine the number of failed registrations in the past 24 hours.

Click the link to go to the **History Retention Settings** page and increase the number of registration records to retain on each cluster.

See also:

Alerts on page 342

Alert 7005

Site <sitename> has no available aliases for automatic ISDN assignment.

The specified site is configured for automatic E.164 alias number assignment, but all of the aliases within the specified range is already assigned.

Click the link to go to the Network > Site Topology > Sites page to begin troubleshooting. Try expanding the ISDN number ranges specified in the site’s **ISDN Range Assignment** section.

See also:

Alerts on page 342

Alert 7101

<N> Calls rejected starting at <time> due to lack of bandwidth on <throttlepoint-type> <throttlepoint>.

The DMA system has disallowed the specified number of calls <N> from starting, as there is not enough bandwidth to carry the calls on the site topology segment (subnet, site, or site link) with the name <throttlepoint>.

Click the link to go to the **Reports > Call History** page, where the first call to be rejected during this event is displayed. If possible in your environment, increase the bandwidth available to this subnet, site, or site link.

See also:

Alerts on page 342

System Log Files

The **System Log Files** page lists the available system log file archives and lets you run the following **Action** list commands:

- **Roll Logs** — Closes and archives the current log files and starts new log files. If you have a supercluster, you're prompted to choose the cluster whose log files you want to roll.
- **Download Active Logs** — Creates and downloads an archive that contains snapshots of the current log files, but doesn't close the current log files. If your system is a two-server cluster, in the **File Download** dialog box you can select which server's logs to download.
- **Download Archived Logs** — Downloads the selected log file archive.
- **Delete Archived Logs** — Deletes the selected log file archive. Only users with the Auditor role can delete archives, and only archives that have been downloaded can be deleted. We recommend regularly deleting downloaded log file archives in order to free up disk space.
- **Show Download History** — Displays the **Download History** list for the selected log file archive, showing who downloaded the archive and when. This command is only available if the selected archive has been downloaded.

You can change the logging level, rolling frequency, and retention period at **Admin > Local Cluster > Logging Settings**. See Logging Settings on page 80.

The archives are Gzip-compressed tar files. Each archive contains a number of individual log files.

The detailed technical data in the log files is not useful to you, but can help Polycom Global Services resolve problems and provide technical support for your system.

In such a situation, your support representative may ask you to download log archives and send them to Polycom Global Services. You may be asked to manually roll logs in order to begin gathering data anew. After a certain amount of the activity of interest, you may be asked to download the active logs and send them to Polycom Global Services.

The following table describes the fields in the **System Log Files** list.

Column	Description
Time	Date and time that the log file archive was created.
Host	Host name of the server. When the logs are rolled in a two-server cluster (either automatically or manually), an archive is created for each server.
Filename	Name of the log file archive.
Size	Size of the file in megabytes.
Type	Indicates whether this is an automatic archive, manual archive, or system snapshot archive (created when you download the active logs).

The following table describes the fields in the **Download History** list.

Column	Description
User	The user ID of the person who downloaded the archive.
Time	Date and time that the archive was downloaded.

System Logs Procedures

To download a log archive to your PC or workstation

1. Go to **Maintenance > System Log Files**.

   The **System Log Files** page appears.
2. To download a listed log archive:
   a. Select the file you want.
   b. In the **Actions** list, click **Download Archived Logs**.
   c. In the dialog box, select a location and click **Save**.
3. To download an archive of the currently open log files (but not close them):
   a. In the **Actions** list, click **Download Active Logs**.
   b. In the dialog box, specify a location and file name, and click **Save**.

To manually roll the system logs

1. Go to **Maintenance > System Log Files**.

   The **System Log Files** page appears.
2. In the **Actions** list, click **Roll Logs**.

   If you have a supercluster, you're prompted to choose the cluster whose log files you want to roll.
3. If applicable, select a cluster. Wait a few seconds.

   The system closes and archives the current log files and starts writing new ones. A dialog box informs you that logs have been rolled, and the new log archive appears in the **System Log Files** list. For a two-server cluster, an archive is created for each server.
4. Click **OK**.

To delete a system log archive

Note: Deleting Archives
Only users with the Auditor role can delete archives, and only archives that have been downloaded can be deleted.

1. Go to **Maintenance > System Log Files**.

   The **System Log Files** page appears.
2. Select the log archive and verify that the **Show Download History** command appears, indicating that it has been downloaded at least once and can be deleted.

   Click the command to see the **Download History** list.
3. In the **Actions** list, click **Delete Archived Logs**.

   A confirmation dialog box appears.
4. Click **Yes**.

See also:

Management and Maintenance Overview on page 332
Recommended Regular Maintenance on page 334
Alerts on page 342
Call Detail Records (CDRs) on page 400

Troubleshooting Utilities

The Polycom RealPresence DMA system's **Troubleshooting Utilities** submenu includes several useful network and system status commands, which you can run and view the output of in the system's familiar graphical interface. Each command is run on each server in the cluster, and the results are displayed in a separate panel for each server.

Ping

Use **Ping** to verify that the Polycom RealPresence DMA system's servers can communicate with another device in the network.

To run ping on each server

1. Go to **Maintenance > Troubleshooting Utilities > Ping**.
2. Enter an IP address or host name and click **Ping**.

   The system displays results of the command for each server.

Traceroute

Use **Traceroute** to see the route that the servers use to reach the address you specify and the latency (round trip) for each hop.

To run traceroute on each server

1. Go to **Maintenance > Troubleshooting Utilities > Traceroute**.
2. Enter an IP address or host name and click **Trace**.

   The system displays results of the command for each server.

Top

Use **Top** to see an overview of each server's current status, including CPU and memory usage, number of tasks, and list of running processes. The displays update every few seconds.

To run top on each server

» Go to **Maintenance > Troubleshooting Utilities > Top**.

The system displays results of the command for each server.

I/O Stats

Use **I/O Stats** to see CPU resource allocation and read/write statistics for each server.

To run iostat on each server

» Go to **Maintenance > Troubleshooting Utilities > I/O Stats**.

The system displays results of the command for each server.

SAR

Use **SAR** to see a complete system activity report (from the preceding midnight to the current time) for each server.

To run sar on each server

» Go to **Maintenance > Troubleshooting Utilities > SAR**.

The system displays results of the command for each server.

NTP Status

Use **NTP Status** to see a list of clock sources known to each server (including the local clock) and their status. It runs the command `ntpq -p` on each server. For detailed information about the output of this command, see:

http://nlug.ml1.co.uk/2012/01/ntpq-p-output/831

To run ntpq -p on each server

» Go to **Maintenance > Troubleshooting Utilities > NTP Status**.

The system displays results of the command for each server.

See also:

Management and Maintenance Overview on page 332

Recommended Regular Maintenance on page 334

Diagnostics for your Dell Server

If your RealPresence DMA system was shipped with a Dell PowerEdge R620 server, you need to have a monitor and USB keyboard in order to run server diagnostics.

Perform these diagnostics only under the guidance of Polycom Global Services.

See also:

Management and Maintenance Overview on page 332

Recommended Regular Maintenance on page 334

Backing Up and Restoring

Every night, each Polycom RealPresence DMA system cluster creates a configuration-only backup of the system, which includes:

- Local user account information (including local data for enterprise users, such as conference room attributes)
- System configuration data
- Supercluster and resource management system integration data (if applicable)

At any time, you can create either a configuration-only backup or a full backup, which adds all the transactional data, including logs, CDRs, network usage, and audit (history) data.

The backup file is for the cluster, but on a two-server cluster, a copy of the backup exists on each server. This ensures that the backup files are available even if one of the servers isn't running.

The cluster keeps the most recent ten backups (deleting the oldest backup file when a new one is created).

Note: Backup Removal
The system may delete additional backups to free up disk space if necessary.

The Polycom RealPresence DMA system's **Backup and Restore** page lets you:

- Manually create a full or configuration-only backup of that cluster.
- Download backup files from the cluster for safekeeping.
- Delete backup files to free up disk space.
- Upload backup files to the cluster.
- Restore from a configuration-only backup file, which lets you return the system state (IP network configuration, feature and system configuration, or both) to what was backed up, but leaves transactional data stores (including logs, CDRs, and audit data) empty.
- Restore from a full backup file, which lets you return both the system state and the transactional data stores (including logs, CDRs, and audit data) to what was backed up.

The option to omit IP network configuration (see Confirm Restore Dialog Box on page 375) makes it possible to "clone" an existing RealPresence DMA cluster's feature and system configuration to a new cluster without introducing IP address conflicts.

In most cases, the software version of the backup file must match the system's current software version in order to restore from it. But specific releases may include the ability to restore a backup file from specific earlier releases. For instance, because of a CentOS operating system change, no upgrade package is available for version 6.0.2. But after installing version 6.0.2 (overwriting the existing installation), you can restore your configuration and data from a version 5.2 backup.

Note: Best Practices for Backup Data

We strongly suggest that you:

- Download backup files regularly for safekeeping
- Delete backup files after downloading in order to free up disk space.
- If you need to preserve transactional data and be able to restore it, regularly perform a full backup and download it from the cluster.
- If you have a superclustered system, download backup files from each cluster (each cluster's backup files include only the call, conference, and registration history for that cluster).
- Restore from a backup only when there is no activity on the system. Restoring terminates all conferences and reboots the system.
- For a two-server cluster, make system configuration changes, including restores, only when both servers are running and clustered.

If the system is shut down or in a bad state, the Polycom RealPresence DMA USB Configuration Utility (on the USB flash drive used to initially configure the network and system parameters) can restore the Polycom RealPresence DMA system from a backup file (full or configuration-only) that you load onto the USB flash drive.

The following table describes the fields in the **Backup and Restore** list.

Column	Description
Creation Date	Timestamp of the backup file.
Name	Name of the backup file.
Size	Size of the backup file.
System Version	Version number of the application that created the backup file.
SHA1	SHA1 checksum for the backup file. You can use this to confirm that a downloaded file is an exact copy of one on the server.

See also:

Management and Maintenance Overview on page 332

Recommended Regular Maintenance on page 334

Confirm Restore Dialog Box on page 375

Backup and Restore Procedures on page 376

Confirm Restore Dialog Box

The **Confirm Restore** dialog box appears when you select a backup file and click **Restore Selected** in the **Actions** list.

If the backup file you selected is from a non-identical version of the software, you're warned of the possible consequences and asked to confirm that you want to continue.

Select which data you want to restore and click **OK**. The options may include:

- IP network configuration
- Feature and system configuration

- History, network usage, and log data

Which data you can restore depends on:

- The type of backup file (full or config-only) you selected.
- For a restore from a non-identical software version, which restore operations the current version supports for the source version data.

Caution: Restoring Config-Only Backups

Restoring feature and system configuration, but not network configuration (or vice versa) will result in invalid primary or backup cluster assignments for some territories. After the restore operation is complete, go to **Network > Site Topology > Territories** and assign primary and backup clusters to the affected territories.

See also:

Backing Up and Restoring on page 374

Backup and Restore Procedures

Caution: Restoring Initiates a System Restart

Restoring from a backup restarts the system and terminates all active conferences.

Note: Restoring Backups with Resource Management Integration

You can restore the system while it's integrated with a Polycom RealPresence Resource Manager or CMA system, but the result depends on the state when the backup you're restoring from was made.

If the system was integrated with a Polycom RealPresence Resource Manager or CMA system when the backup you're restoring was made, that integration is restored. If the system wasn't integrated when the backup was made, it will no longer be integrated after restoring.

Note: Backing Up and Restoring with Superclusters

You can (and should) create and download backups from clusters that are part of a supercluster, but you can't restore a cluster while it's part of a supercluster. You must manually leave the supercluster first. If the cluster is responsible for any territories (as primary or backup), go to **Network > Site Topology > Territories** and reassign those territories.

If you restore a cluster using the USB Configuration Utility while it's part of a supercluster, it's automatically removed from the supercluster.

To download a backup file

1. Go to **Maintenance > Backup and Restore**.

   The list contains the last ten backup files.
2. Select the backup file you want to download.
3. In the **Actions** list, click **Download Selected**.
4. Choose a path and filename for the backup file and click **Save**.

   The **File Download** dialog box indicates when the download is complete.

5 Click **Close**.

To create a new backup file

1 Go to **Maintenance > Backup and Restore**.

2 Verify that the oldest backup file listed is one you don't want to keep or have already downloaded.

Only ten files are saved. Creating a new backup will delete the oldest file (unless there are fewer than ten).

3 In the **Actions** list, click **Create New (Full)** to create a full backup or **Create New (Config Only)** to create a configuration-only backup (no transaction data).

A confirmation dialog tells you the backup archive was created. For a full backup, this may take some time.

4 Click **OK**.

To upload a backup file

1 Go to **Maintenance > Backup and Restore**.

2 Verify that the oldest backup file listed is one you don't want to keep or have already downloaded.

Only ten files are saved. Uploading a backup will delete the oldest file (unless there are fewer than ten).

3 In the **Actions** list, click **Upload**.

4 Choose a backup file to upload and click **Open**.

The **File Upload** dialog box indicates when the upload is complete.

5 Click **Close**.

The system asks if you want to restore now from the backup file you just uploaded.

6 If you don't want to restore (and restart the system) now, click **Manually Later**. When you're ready to restore, use the procedure that follows this one.

7 To restore now, make sure you meet the criteria in the first two steps of the next procedure, and click **Now**.

The **Confirm Restore** dialog box appears.

8 Read the warning, make sure that you want to continue, select which data you want to restore, and click **OK**.

Caution: Restoring Config-Only Backups

Restoring feature and system configuration, but not network configuration (or vice versa) will result in invalid primary or backup cluster assignments for some territories. After the restore operation is complete, go to **Network > Site Topology > Territories** and assign primary and backup clusters to the affected territories.

After a short delay, a dialog box informs you that the system is going to be restored and you'll be logged out.

9 Click **OK**.

The system logs you out and the server reboots (typically, this takes about five minutes). After it comes back up, in a two-server cluster, the second server syncs to it, thus being restored to the same state. Depending on the configuration changes being applied, it may reboot so the changes can take effect.

When done, both servers' LCDs display **RealPresence DMA Clustered**.

10 Log back in as a local admin user and:

a In a two-server cluster, verify on the **Dashboard** that both servers are up and the private network connection is operating properly.

b Go to **Maintenance > Software Upgrade** and check the **Operation History** table.

c If the system was integrated with Active Directory, go to **Admin > Integrations > Microsoft Active Directory** and re-enable the integration.

To restore from a backup file on the cluster

1 If this is a two-server cluster, make sure that both servers are running and clustered. Make sure that there are no calls on the system, and that all MCUs are out of service. See MCU Procedures on page 139.

2 If this cluster is part of a supercluster, remove it from the supercluster. See Supercluster Procedures on page 230.

3 Go to **Maintenance > Backup and Restore**.

4 Select the backup file from which you want to restore.

5 In the **Actions** list, click **Restore Selected**.

The **Confirm Restore** dialog box appears.

6 Read the warning, make sure that you want to continue, select which data you want to restore, and click **OK**.

Caution: Restoring Config-Only Backups

Restoring feature and system configuration, but not network configuration (or vice versa) will result in invalid primary or backup cluster assignments for some territories. After the restore operation is complete, go to **Network > Site Topology > Territories** and assign primary and backup clusters to the affected territories.

After a short delay, a dialog box informs you that the system is going to be restored and you'll be logged out.

7 Click **OK**.

The system logs you out and the server reboots (typically, this takes about five minutes). After it comes back up, in a two-server cluster, the second server syncs to it, restoring it to the same state. Depending on the changes being applied, it may reboot so the changes can take effect.

When done, both servers' LCDs display **RealPresence DMA Clustered**.

8 Log back in as a local admin user and:

a In a two-server cluster, verify on the **Dashboard** that both servers are up and the private network connection is operating properly.

b Go to **Maintenance > Software Upgrade** and check the **Operation History** table.

c If the system was integrated with AD, go to **Admin > Integrations > Microsoft Active Directory** and re-enable the integration.

To restore from a backup file on the Polycom RealPresence DMA system's USB flash drive

Note: Restoring With the USB Configuration Utility

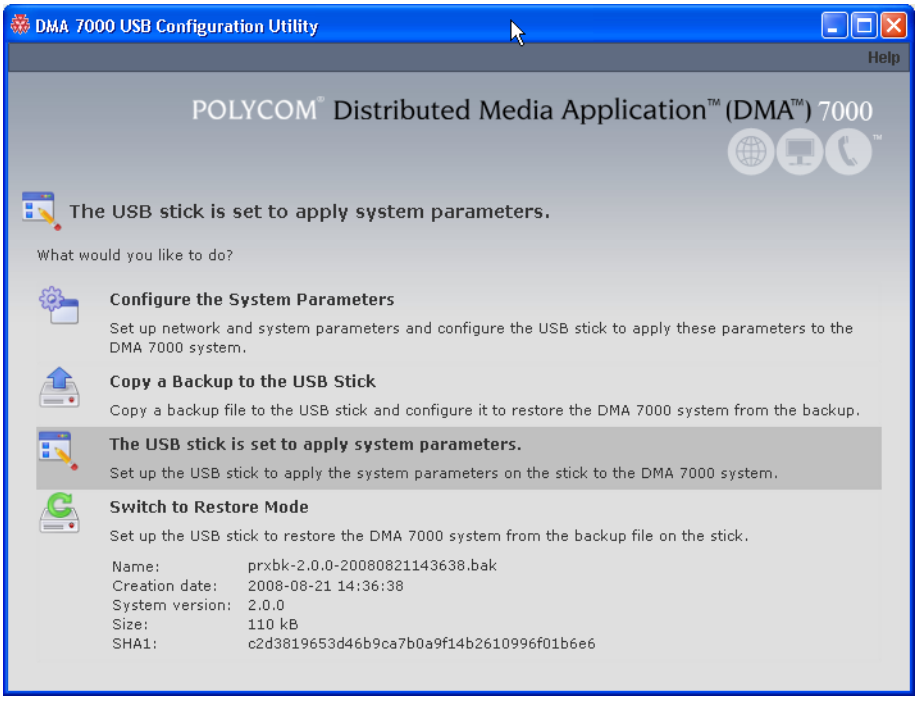
When you use the USB Configuration Utility to restore a backup, you can't select which data to restore. If you copy a config-only backup file to the USB flash drive, both the feature and system configuration data and the IP network configuration data will be restored. If you copy a full backup file to the USB flash drive, the transactional (historical) data will also be restored.

Only backups from identical versions of the software can be restored using the USB Configuration Utility.

1. If the system is running and accessible, log in as an Administrator, make sure that there are no calls on the system and that all MCUs are out of service. See MCU Procedures on page 139.
2. Shut down the system. See Shutting Down and Restarting on page 393.
3. Connect the USB memory stick containing the RealPresence DMA USB Configuration Utility (included with your Polycom RealPresence DMA system) to a Windows PC.
4. When prompted, elect to run the RealPresence DMA USB Configuration Utility.

Note: Starting the Configuration Utility

If autorun doesn't work or is turned off, navigate to the USB memory stick using My Computer, Windows Explorer, or another file manager. Then start the Configuration Utility by double-clicking `dma7000-usb-config.exe`.



5 In the **RealPresence DMA USB Configuration Utility** window, click **Copy a Backup to the USB flash drive**.

6 Select the backup file from which you want to restore the system and click **Open**.

The utility displays an error message if the file isn't a valid Polycom RealPresence DMA system backup. Otherwise, it confirms that the backup file is in place.

The utility's main window states that **The USB flash drive is ready to restore the system from a backup file**. At the bottom of the window, it displays information about the selected backup file.

7 Close the utility.

8 In your system tray, click **Safely Remove Hardware** and select **Safely Remove USB Mass Storage Device**. When a message tells you it's safe to do so, disconnect the USB memory stick from the PC and take it to the data center housing the Polycom RealPresence DMA system server(s).

9 Make sure that the server or servers are turned off. Then insert the USB flash drive into a USB port on one of the servers and turn that server on (but not the other, if there are two).

If this cluster is part of a supercluster, it's automatically removed from the supercluster. The server boots and the data in the backup file is applied. Typically, this takes about five minutes. Depending on the configuration changes being applied, the server may reboot so the changes can take effect.

10 If this is a two-server cluster, after the first server has rebooted (if necessary) and its front-panel LCD displays **RealPresence DMA Ready**, turn on the second server.

The second server boots, finds the first server, and syncs to it, thus being restored to the same state. Depending on the configuration changes being applied, it may reboot so the changes can take effect.

When done, both servers' LCDs display **RealPresence DMA Clustered**.

11 Log back in as a local admin user and:

- **a** In a two-server cluster, verify on the **Dashboard** that both servers are up and the private network connection is operating properly.
- **b** Go to **Maintenance > Software Upgrade** and check the **Operation History** table.
- **c** If the system was integrated with Active Directory, go to **Admin > Integrations > Microsoft Active Directory** and re-enable the integration.

See also:

Backing Up and Restoring on page 374

Confirm Restore Dialog Box on page 375

Upgrading the Software

The Polycom RealPresence DMA system's **Software Upgrade** page lets you upload a software upgrade package and install the upgrade on your system (both servers, if present). It also lets you roll back to the previous version, if necessary.

This process can be used for patches, minor upgrades, and major upgrades. In all three cases, the current system configuration (including users, MCUs, Conference Manager settings, Call Server settings, and local cluster settings) is preserved.

Patches don't require new license keys, but major and minor version upgrades do. Any of the three may require a system restart. If so, that information is displayed on the page after you upload the upgrade package.

Note: Virtual Host Names and IP Addresses Unnecessary for Single Servers

This version of the Polycom RealPresence DMA system eliminates the need for virtual host name(s) and IP addresses in a single-server system. When a version 5.0 or earlier single-server RealPresence DMA system is upgraded to version 5.1 or later, the previous version's virtual host name(s) and IP addresses become the upgraded version's physical host name(s) and IP addresses, so accessing the system doesn't change.

(Exception: If only IPv6 is enabled, the system must have two addresses, so a single-server system must still have a virtual host name and IP address.)

The following table describes the parts of the **Software Upgrade** page.

Field	Description
Version Information	Shows the current system version and the rollback version (if any), which is the previous system version.
Upgrade Package Details	Shows the version number and other information about the upgrade file that's been uploaded (if any). Also indicates whether the system must be restarted after upgrading and displays a brief description, which includes an estimated install time.
Operation History	Lists each upgrade management operation (upgrade or downgrade), showing the server on which it was performed, package version, date of the operation, and which user performed it.

See also:

Management and Maintenance Overview on page 332

Recommended Regular Maintenance on page 334

Basic Upgrade Procedures on page 382

Incompatible Software Version Supercluster Upgrades on page 386

Factors to Consider for an Incremental Supercluster Upgrade on page 387

Simplified Supercluster Upgrade (Complete Service Outage) on page 387

Complex Supercluster Upgrade (Some Service Maintained) on page 390

Basic Upgrade Procedures

Caution: Upgrade Considerations

Always check the upgrade version release notes before installing an upgrade.

The upgrade installation process automatically creates a backup, which enables you to roll back an upgrade (restore the previous version) if necessary. As a precaution, however, we recommend that you download a recent backup file before you begin to install an upgrade. See Backing Up and Restoring on page 374.

You can roll back only the last applied upgrade. Rolling back an upgrade restores the database to its state prior to the upgrade, so data may be lost.

The procedure below is for:

- Installing any software upgrade on a single-server or two-server system that's not part of a supercluster.
- Installing a patch (supercluster-compatible software upgrade) on a cluster that's part of a supercluster. In that case, you repeat the procedure on each cluster.

To apply a major or minor software upgrade (not supercluster-compatible) to a superclustered system, see Incompatible Software Version Supercluster Upgrades on page 386.

Note: Upgrade Tips

To minimize the time required for an upgrade:

- If the upgrade requires a new license, obtain the license activation key(s) ahead of time.
- Download a recent backup and upload the upgrade package file (the first five steps below) ahead of time. For a supercluster, do this on each cluster.
- Perform the remainder of the procedure during a maintenance window when there are no calls or conferences so that you can immediately take the cluster out of service instead of having to wait for all activity to end.

Using a maintenance window with no calls on the system also eliminates any concerns about whether the remaining clusters of a supercluster have sufficient capacity to handle the load of the cluster being upgraded.

Note: Redirecting Endpoints to a Different Call Server

To successfully redirect certain older or third-party endpoints to a different Call Server in the supercluster, one of the following may be necessary:

- Managed endpoints may be re-provisioned by the Polycom RealPresence Resource Manager system, CMA system, or third-party endpoint management system responsible for them.

Unmanaged endpoints may be manually reconfigured and if necessary restarted (in some cases, restarting an endpoint may be sufficient).

To install an upgrade

1. Put the upgrade package file somewhere on or accessible from your PC.
2. Go to **Maintenance > Software Upgrade**.
3. In the **Actions** list, click **Upload**.
4. Select the upgrade package file and click **Open**.

   The **File Upload** dialog box indicates when the upload is complete.

5 Click **Close**.

The **Upgrade Package Details** section displays information about the file you uploaded. The description includes an estimated install time.

6 Verify that the upgrade package is correct. If a system restart is required, make sure that there are no calls on the system.

Most upgrades will require a restart.

7 If this cluster is part of a supercluster, do the following:

a If integrated with a Polycom RealPresence Resource Manager or CMA system, go to **Admin > Integrations > Resource Management System**. and terminate the integration.

b Go to **Network > Site Topology > Territories** and reassign the cluster's territory responsibilities. Wait a few minutes and verify on another cluster that the change has been replicated.

c Go to **Network > RealPresence DMAs** and take this cluster out of service (or busy it out and wait for all calls to end).

d Select this cluster and click **Remove from Supercluster**. When asked to confirm that you want to remove the cluster, click **Yes**.

The cluster is removed from the supercluster. A dialog box informs you when the process is complete. Then it logs you out and restarts.

e Click **OK** to log out immediately, or simply wait.

Note: Give the System Time to Restart

Wait about five minutes before trying to log back into the system. You may need to restart your browser or flush your browser cache in order to log back in.

f Log back into the cluster you removed and verify on the **Supercluster Status** pane of the **Dashboard** that the cluster is no longer part of the supercluster.

g Return to **Maintenance > Software Upgrade**.

8 In the **Actions** list, click **Upgrade**.

A confirmation dialog box appears.

9 Click **Yes**.

If a restart is required, a dialog box informs you that the upgrade is starting. Shortly after that, the system logs you out and restarts.

10 Click **OK** to log out immediately, or simply wait.

The **Upgrade Status** page appears. It shows progress and displays the upgrade logging. When the upgrade is complete, the system reboots.

When the upgrade and reboot are finished, in a two-server cluster, both servers' LCDs display **RealPresence DMA Clustered** (in a single-server system, the LCD displays **RealPresence DMA Ready**), and you're able to log back in.

Note: Restart Your Browser if Needed

You may need to restart your browser or flush your browser cache in order to log back into the system.

11 Log back in and:

a In a two-server cluster, verify on the **Dashboard** that both servers are up and the private network connection is operating properly.

b Go to **Maintenance > Software Upgrade** and check the **Operation History** table.

c If the upgrade requires a new license activation key code or codes, obtain and install them as described in Add Licenses on page 82.

12 If this cluster is part of a supercluster, do the following:

a Go to **Network > RealPresence DMAs**, and rejoin this cluster to the supercluster. See Supercluster Procedures on page 230.

Caution: Rejoin the Correct Cluster

Be sure you select the cluster you just upgraded (the one you're logged into) and join it to another cluster, not the other way around.

b Go to **Network > Site Topology > Territories** and reassign territory responsibilities back to this cluster. Or, if previously integrated with a Polycom RealPresence Resource Manager or CMA system, go to **Admin > Integrations > Resource Management System**. and reestablish the integration.

Integration with a resource management system imports the site topology data, including territory assignments, from that system.

13 Call Polycom Global Services if:

- After waiting significantly longer than the estimated install time, you're still unable to log back in.
- You can log in, but the **Dashboard** shows only one server for a two-server cluster.
- The package version numbers on the two servers are not the same.

14 For a supercluster, repeat the above procedure for each additional cluster.

To roll back an upgrade, restoring the previous version

1 Go to **Maintenance > Software Upgrade**.

2 Verify that you want to downgrade the system to the rollback version shown and that you're prepared for a system restart, if required.

Most rollbacks will require a restart.

3 If this cluster is part of a supercluster and you're rolling back after rejoining the supercluster, do the following:

a If integrated with a Polycom RealPresence Resource Manager or CMA system, go to **Admin > Integrations > Resource Management System**. and terminate the integration.

b Go to **Network > Site Topology > Territories** and reassign the cluster's territory responsibilities. Wait a few minutes and verify on another cluster that the change has been replicated.

c Go to **Network > RealPresence DMAs** and take it out of service (or busy it out and wait for all calls to end).

d Select this cluster and click **Remove from Supercluster**. When asked to confirm that you want to remove the cluster, click **Yes**.

The cluster is removed from the supercluster. A dialog box informs you when the process is complete. Then it logs you out and restarts.

e Click **OK** to log out immediately, or simply wait.

Note: Give the System Time to Restart

Wait about five minutes before trying to log back into the system. You may need to restart your browser or flush your browser cache in order to do log back in.

f Log back into the cluster you removed and verify on the **Supercluster Status** pane of the **Dashboard** that the cluster is no longer part of the supercluster.

g Return to **Maintenance > Software Upgrade**.

4 In the **Actions** list, click **Roll Back**.

A confirmation dialog box appears.

5 Click **Yes**.

If a restart is required, a dialog box informs you that the downgrade is starting. Shortly after that, the system logs you out and restarts.

6 Click **OK** to log out immediately, or simply wait.

When the downgrade process is finished, in a two-server cluster, both servers' LCDs display **RealPresence DMA Clustered** (in a single-server system, the LCD displays **RealPresence DMA Ready**), and you're able to log back in.

Note: Restart Your Browser if Necessary

You may need to restart your browser or flush your browser cache in order to log back into the system.

7 Log back in and:

a In a two-server cluster, verify on the **Dashboard** that both servers are up and the private network connection is operating properly.

b Go to **Maintenance > Software Upgrade** and check the **Operation History** table.

8 If this cluster is part of a supercluster, do the following:

a Go to **Network > RealPresence DMAs**, and rejoin this cluster to the supercluster. See Supercluster Procedures on page 230.

Caution: Rejoin the Correct Cluster

Be sure you select the cluster you just downgraded (the one you're logged into) and join it to another cluster, not the other way around.

b Go to **Network > Site Topology > Territories** and reassign territory responsibilities back to this cluster. Or, if previously integrated with a Polycom RealPresence Resource Manager or CMA system, go to **Admin > Integrations > Resource Management System**. and reestablish the integration.

Integration with a resource management system imports the site topology data, including territory assignments, from that system.

9 Call Polycom Global Services if:

- After waiting significantly longer than the estimated install time, you're still unable to log back in.
- You can log in, but the **Dashboard** shows only one server for a two-server cluster.
- The package version numbers on the two servers are not the same.

See also:

Management and Maintenance Overview on page 332

Upgrading the Software on page 380

Incompatible Software Version Supercluster Upgrades

All the clusters in a supercluster must be running compatible software versions. Patch releases will generally be compatible, and can be installed using the procedure in Basic Upgrade Procedures on page 382.

But major and minor version upgrades will not be compatible. An incompatible version software upgrade on all clusters in a supercluster requires careful planning because it's not possible to upgrade a cluster to an incompatible software version while it's a member of the supercluster. Each cluster must be upgraded individually.

You have two options for upgrading a supercluster:

- Perform the cluster upgrades in a system-wide maintenance window during which all the clusters can be shut down and the service is completely unavailable. This is by far the simplest and fastest method, taking as little as an hour or two.
- Perform the cluster upgrades incrementally so that some system capacity (although greatly reduced) remains available during the process. This method is far more complex, error-prone, and lengthy. It can easily take five or more times as long.

  During the course of an incremental upgrade, some clusters will be on the new software version while others are still on the older version, effectively creating two separate superclusters until all the clusters are upgraded. This requires significant configuration changes in order for some level of service to remain available, and those configuration changes must be repeated again and again as each cluster is removed from the original supercluster, upgraded, and added to the new supercluster.

  Before deciding to undertake an incremental upgrade, carefully read and consider the information in Factors to Consider for an Incremental Supercluster Upgrade on page 387.

Caution: Use Care When Upgrading a Supercluster

We strongly recommend upgrading a supercluster only during a system-wide maintenance window when there are no calls or conferences on the system and all clusters can be taken out of service. This makes the process significantly faster and easier.

If you must upgrade incrementally, be aware of the limited capacity available at any given point in the process. It's advisable to ensure that there is little or no conferencing activity in any given territory until after the new supercluster has been created and territory responsibilities for that territory have been reassigned to a cluster in the new supercluster.

To minimize the time required for an upgrade:

- If the upgrade requires a new license, obtain the license keys ahead of time.

Download a recent backup and upload the upgrade package file to all clusters in the supercluster ahead of time.

See also:

Upgrading the Software on page 380

Basic Upgrade Procedures on page 382

Simplified Supercluster Upgrade (Complete Service Outage) on page 387

Complex Supercluster Upgrade (Some Service Maintained) on page 390

Factors to Consider for an Incremental Supercluster Upgrade

Before deciding to attempt an incremental supercluster software upgrade, be aware of the following:

- An incremental upgrade can easily take five times as long as the simplified method.
- As clusters are removed from the existing supercluster and upgraded, its capacity is reduced. As the new supercluster is being built, it won't be at full capacity until all clusters are upgraded. Both the existing supercluster and the new one will have limited capacity for a significant period of time, with the following possible consequences:
  - Some endpoints may be unable to register.
  - The MCUs remaining in the supercluster may not have the capacity to handle all the conferences.
  - Some endpoints may not successfully redirect their registrations and may not be able to make/receive calls.
- As the old supercluster is deconstructed, the territory associations have to be changed each time a cluster leaves. As the new supercluster is built, the territory associations have to be changed each time a cluster joins.
- As the clusters for some endpoints are removed from the existing supercluster and join the new one, the video network becomes partitioned with separate islands of endpoints.
- Some endpoints don't respond well to a gatekeeper change (such as a signaled alternate gatekeeper). To successfully redirect these endpoints to a Call Server in the new supercluster, one of the following may be necessary:
  - Managed endpoints may be re-provisioned by the Polycom RealPresence Resource Manager system, CMA system, or third-party endpoint management system responsible for them.
  - Unmanaged endpoints may be manually reconfigured and if necessary restarted (in some cases, restarting an endpoint may be sufficient).
- Any configuration changes to the old supercluster (once the first cluster has left) may be lost when the new supercluster is created.
- History records for calls and conferences that cross from the old supercluster to the new one (and vice versa) will not be merged into a single call/conference after the upgrade.
- If embedded DNS is enabled, the enterprise DNS can only point to one supercluster. The other supercluster will not have territory fail-over capability.
- If Conference Manager is enabled, during the time that the supercluster is split into two, each supercluster could host separate conferences on the same VMR.
- The site topology bandwidth specifications will be duplicated in both the old supercluster and the new supercluster. Without significant changes to the site topology's bandwidth configuration, this can lead to bandwidth overloading during the upgrade.

See also:

Upgrading the Software on page 380

Basic Upgrade Procedures on page 382

Simplified Supercluster Upgrade (Complete Service Outage)

If it's possible to schedule the upgrade for a maintenance window during which there is no service, we strongly recommend doing so, as described below. This greatly shortens and simplifies the process.

Caution: Upgrade Considerations

Always check the upgrade version release notes before installing an upgrade.

The upgrade installation process automatically creates a backup, which enables you to roll back an upgrade (restore the previous version) if necessary. As a precaution, however, we recommend that you download a recent backup file before you begin to install an upgrade. See Backing Up and Restoring on page 374.

You can roll back only the last applied upgrade. Rolling back an upgrade restores the database to its state prior to the upgrade, so data may be lost.

The procedure below is for applying a major or minor software upgrade (not supercluster-compatible) to a superclustered system.

To minimize the time required for an upgrade:

- Obtain the license activation key(s) ahead of time.
- On each cluster, download a recent backup and upload the upgrade package file (the first two steps below) ahead of time.

Perform the remainder of the procedure during a maintenance window when there are no calls or conferences so that you can immediately take all the clusters out of service instead of having to wait for all activity to end.

To upgrade a supercluster by taking all clusters out of service

1. Put the upgrade package file somewhere on or accessible from your PC.
2. On each cluster in the supercluster, do the following:
   a. Go to **Maintenance > Software Upgrade**.
   b. In the **Actions** list, click **Upload**.
   c. Select the upgrade package file and click **Open**.

      The **File Upload** dialog box indicates when the upload is complete.
   d. Click **Close**.

      The **Upgrade Package Details** section displays information about the file you uploaded. The description includes an estimated install time.
   e. Verify that the upgrade package is correct.
3. On any cluster in the supercluster, do the following:
   a. Go to **Network > Site Topology > Territories** and record each territory's primary and backup cluster, whether it hosts conference rooms, and associated sites.

      You may need this information later to restore the configuration.
   b. If there are no active calls and conferences, skip to **d**. Otherwise, go to **Network > RealPresence DMAs** and busy out each cluster in the supercluster.

      This permits existing calls and conferences to continue, but prevents new conferences and point-to-point calls from starting.
   c. On the Dashboard, monitor the **Call Server Active Calls** and **Conference Manager MCUs** panes.
   d. When all calls and conferences have ended, go to **Network > RealPresence DMAs** and stop using each cluster in the supercluster.

      This completely shuts down the supercluster.

e Remove each cluster except the one you're logged into from the supercluster.

As each cluster is removed, it restarts.

4 On the cluster you're logged into (let's call it cluster A), do the following:

a Go to **Maintenance > Software Upgrade**.

b In the **Actions** list, click **Upgrade**.

A confirmation dialog box appears.

c Click **Yes**.

If a restart is required, a dialog box informs you that the upgrade is starting. Shortly after that, the system logs you out and restarts.

d Click **OK** to log out immediately, or simply wait.

The **Upgrade Status** page appears. It shows progress and displays the upgrade logging. When the upgrade is complete, the system reboots.

Note: Save Time with Cluster Upgrades

If you have assistants to help you, they can perform steps 5 and 6, upgrading all the other clusters simultaneously, while the upgrade package is being installed on cluster A. If not, you can start upgrading cluster B at this point, and as soon as it restarts, start upgrading the next cluster, and so on. You don't need to wait for each cluster upgrade to be finished before starting the next one.

When the upgrade and reboot are finished, in a two-server cluster, both servers' LCDs display **RealPresence DMA Clustered** (in a single-server system, the LCD displays **RealPresence DMA Ready**), and you're able to log back in.

Note: Restart Your Browser if Necessary

You may need to restart your browser or flush your browser cache in order to log back into the system.

e Log back in and, in a two-server cluster, verify on the **Dashboard** that both servers are up and the private network connection is operating properly.

f Go to **Maintenance > Software Upgrade** and check the **Operation History** table.

g If the upgrade requires a new license activation key code or codes, obtain and install them as described in Add Licenses on page 82.

5 Log into one of the other clusters (let's call it cluster B) and do the following:

a Go to **Maintenance > Software Upgrade**.

b In the **Actions** list, click **Upgrade**.

A confirmation dialog box appears.

c Click **Yes**.

If a restart is required, a dialog box informs you that the upgrade is starting. Shortly after that, the system logs you out and restarts.

d Click **OK** to log out immediately, or simply wait.

When the upgrade process is finished, in a two-server cluster, both servers' LCDs display **RealPresence DMA Clustered** (in a single-server system, the LCD displays **RealPresence DMA Ready**), and you're able to log back in.

Note: Restart Your Browser if Necessary

You may need to restart your browser or flush your browser cache in order to log back into the system.

e Log back in and, in a two-server cluster, verify on the **Dashboard** that both servers are up and the private network connection is operating properly.

f Go to **Maintenance > Software Upgrade** and check the **Operation History** table.

g If the upgrade requires a new license activation key code or codes, obtain and install them as described in Add Licenses on page 82.

h Go to **Network > RealPresence DMAs** and join this cluster to cluster A to create a supercluster.

You now have a new supercluster consisting of two upgraded clusters.

6 For each additional cluster, repeat step 5 of this procedure to upgrade it and add it to the new supercluster.

7 On any cluster of the new supercluster, do the following:

a Go to **Network > Site Topology > Territories** and restore the territory assignments that you recorded at step 3a of this procedure. Or, if previously integrated with a Polycom RealPresence Resource Manager or CMA system, go to **Admin > Integrations > Resource Management System**. and reestablish the integration.

Integration with a resource management system imports the site topology data, including territory assignments, from that system.

b Go to **Network > RealPresence DMAs** and return each cluster to service.

c Verify, and restore or update if necessary, other supercluster configuration settings.

You should now have a fully functional upgraded supercluster.

8 Call Polycom Global Services if, for any cluster:

- After waiting significantly longer than the estimated install time, you're still unable to log back in.
- You can log in, but the **Dashboard** shows only one server for a two-server cluster.
- The package version numbers on the two servers are not the same.

See also:

Upgrading the Software on page 380

Basic Upgrade Procedures on page 382

Factors to Consider for an Incremental Supercluster Upgrade on page 387

Complex Supercluster Upgrade (Some Service Maintained)

Please contact Polycom Global Services for instructions and assistance.

See also:

Upgrading the Software on page 380

Basic Upgrade Procedures on page 382

Factors to Consider for an Incremental Supercluster Upgrade on page 387

Simplified Supercluster Upgrade (Complete Service Outage) on page 387

Adding a Second Server

A single-server Polycom RealPresence DMA system can be upgraded to a fault-tolerant two-server cluster at any time. For an overview of how a two-server cluster works and its advantages, see Two-server Cluster Configuration on page 18.

To form a two-server cluster, both servers must be running the same version of the Polycom RealPresence DMA system software. Depending on the software level of your existing server, you can accomplish this in one of two ways:

- If your existing server is running an unpatched release version of the system software for which you have the installation DVD, follow the procedure in Expanding an Unpatched System on page 391.
- If your existing server is running a patched version of the system software different from that on the installation DVD, follow the procedure in Expanding a Patched System on page 392.

Both procedures assume that you've ordered and received the server expansion package, which includes the second server, its accessories, and a new License Certificate.

See also:

Management and Maintenance Overview on page 332

Expanding an Unpatched System

To expand an unpatched single-server system into a two-server cluster

1. Unpack, inspect, and physically install the second server as described in its *Getting Started Guide*. Mount it in the rack adjacent to the first Polycom RealPresence DMA system server (or close enough to connect them with one of the provided crossover Ethernet cables).
2. Log into your Polycom RealPresence DMA system, go to **Admin >Local Cluster > Network Settings**, change **System server configuration** to **2 server configuration**, and add the Server 2 host name(s) and IP address(es) for the second server. See Network Settings on page 63.

   The first server (Server 1) reboots.
3. Connect the second server to the network:
   a. Connect the GB 1 Ethernet port of the new server to the enterprise network.
   b. Use one of the provided crossover cables to connect the GB 2 ports of the two servers.

Caution: Allow First Server to Start Fully
The first server must be running properly before you turn on the second server.

4. Confirm that the first server is running and displays **RealPresence DMA Ready**. Then turn on the second server, insert the installation DVD, and reboot it.

   The server boots from the DVD, and the installation commences. About 15-20 minutes later, the DVD ejects and the server reboots. It detects the presence of Server 1, gets its configuration settings from it, and joins the cluster. When done, both servers' LCDs display **RealPresence DMA Clustered**.
5. Log into the system, go to **Admin >Local Cluster > Licenses**, and follow the procedure for obtaining and entering a license activation key. See Add Licenses on page 82.
6. On the **Dashboard**, check the **License Status**, **Supercluster Status**, and **Cluster Info** panes to verify that you now have a properly configured two-server cluster.

See also:

Management and Maintenance Overview on page 332

Adding a Second Server on page 391

Expanding a Patched System on page 392

Expanding a Patched System

To expand a patched single-server system into a two-server cluster

1. Unpack, inspect, and physically install the second server as described in its *Getting Started Guide*. Mount it in the rack adjacent to the first Polycom RealPresence DMA system server (or close enough to connect them with one of the provided crossover Ethernet cables).
2. Connect the GB 1 Ethernet port of the new server to the enterprise network. Don't connect the crossover cable between the two servers at this time.
3. Log into your existing Polycom RealPresence DMA system and determine the software version (including patch level) installed on the first (existing) server. Write it down for later reference.
4. Go to **Admin >Local Cluster > Network Settings**, change **System server configuration** to **2 server configuration**, and add the Server 2 host name and IP address for the second server. See Network Settings on page 63.

   The first server (Server 1) reboots.
5. Shut down the first server (Server 1).
6. Using the USB Configuration Utility and the procedure in the *Getting Started Guide*, complete the installation and initial configuration of the new server as a stand-alone single-server system. If necessary, use your installation DVD to install the same release version of the software that's on your first server.

Caution: Assign the Server its Own IP Address(es)

Assign the new server its own real and virtual IP addresses. Don't assign it the virtual IP address of the existing system.

7. Log into the new server, go to **Maintenance > Software Upgrade**, and install the patch(es) needed to make it match the software version on the first server. See Upgrading the Software on page 380.
8. Shut down the new server. See Shutting Down and Restarting on page 393.
9. Use one of the provided crossover cables to connect the GB 2 ports of the two servers.
10. Turn on the first server (Server 1).

Caution: Allow First Server to Start Fully

The first server must be running properly before you turn on the second server.

11. When the first server displays **RealPresence DMA Ready**, turn on the second server.

    The second server boots, detects the presence of Server 1, gets its configuration settings from it, and joins the cluster. When done, both servers' LCDs display **RealPresence DMA Clustered**.
12. Log into the system, go to **Admin >Local Cluster > Licenses**, and follow the procedure for obtaining and entering a license activation key. See Add Licenses on page 82.

13 On the **Dashboard**, check the **License Status**, **Supercluster Status**, and **Cluster Info** panes to verify that you now have a properly configured two-server cluster.

See also:

Management and Maintenance Overview on page 332

Adding a Second Server on page 391

Expanding an Unpatched System on page 391

Replacing a Failed Server

Replacing a server is essentially the same process as adding a second server to a single-server system. As in that situation, you must make sure that both servers are running the same version of the Polycom RealPresence DMA system software.

The procedure assumes that you've gone through the RMA process and received the replacement server package, which includes the server, its accessories, and a new License Certificate.

To replace a failed server in a two-server cluster

1 If you haven't already done so, power down, uncable, and remove the failed server.

2 Log into your Polycom RealPresence DMA system and determine the software version (including patch level) installed on the remaining server. Write it down for later reference.

3 Do one of the following:

- If your system is running an unpatched release version of the system software for which you have the installation DVD, follow the procedure in Expanding an Unpatched System on page 391, skipping step 2.
- If your system is running a patched version of the system software different from that on the installation DVD, follow the procedure in Expanding a Patched System on page 392, skipping steps 3 and 4.

See also:

Management and Maintenance Overview on page 332

Recommended Regular Maintenance on page 334

Shutting Down and Restarting

The Polycom RealPresence DMA system's **Shutdown and Restart** page lets you restart the system or turn it off completely. In a two-server cluster, you can shut down or restart either one or both servers in the cluster.

Both shutting down and restarting will terminate all existing calls and log out all current users.

Caution: Always Shut Down Properly

Don't turn off a Polycom RealPresence DMA system server by simply unplugging it or otherwise removing power, especially if it's going to remain off for some time. If a server loses power without being properly shut down, the RAID controller fails to shut down, eventually depleting its battery. If that happens, the server can't be restarted without user input, requiring a keyboard and monitor.

There is no mechanism for shutting down an entire supercluster. If you want to shut down all clusters in a supercluster, you must do so one cluster at a time. Wait at least five minutes before shutting down the next cluster.

If you want to shut down a cluster in the supercluster while other clusters remain on, remove the cluster from the supercluster if it will remain shut down for more than a few hours. The supercluster retains only a limited amount of "playback" data that can be used to bring the shutdown cluster back up to date once it's turned back on. If the cluster remains off long enough, its data store can't be made consistent with the rest of the supercluster.

To restart or shut down one or both servers in a cluster

1. Go to **Maintenance > Shutdown and Restart**.

   The page displays the server or servers in the cluster, along with status information.
2. Select the server(s) you want to shut down or restart.
3. Do one of the following:
   - To restart the selected server(s), click **Restart**.
   - To shut down the selected server(s), click **Shut Down**.
4. When asked to confirm that you want to restart or shut down, click **Yes**.

   The system logs you out and the selected server(s) shut down. If you chose **Restart**, the server(s) reboot, and conference service becomes available again when the restart is complete (typically, this takes about five minutes).

   If you chose **Shut Down**, the server(s) remain powered off until you manually turn them back on.

To shut down all clusters in a supercluster, repeat the above procedure on each additional cluster, waiting at least five minutes between clusters.

To start up a shut-down cluster

1. Turn on the first server in the cluster.

   The server boots, which takes several minutes.
2. Wait at least one minute and turn on the second server in the cluster.

   The second server boots. When done, both servers' LCDs display **RealPresence DMA Clustered**.

To start up all clusters in a supercluster, repeat the above procedure on each additional cluster, waiting at least five minutes between clusters. After all clusters have restarted, it may take up to 30 minutes for all supercluster-wide replication to complete.

See also:

Management and Maintenance Overview on page 332

Recommended Regular Maintenance on page 334

System Reports

This chapter describes the following Polycom® RealPresence® Distributed Media Application™ (DMA®) 7000 system reports topics:

- Alert History
- Call History
- Conference History
- Call Detail Records (CDRs)
- Registration History Report
- Active Directory Integration Report
- Orphaned Groups and Users Report
- Conference Room Errors Report
- Enterprise Passcode Errors Report
- Network Usage Report

Alert History

The **Alert History** page lets you view all the system alerts for the time period you select. The system retains the most recent 500 alerts.

The search pane above the list lets you find alerts matching the criteria you specify. Click the down arrow to expand the search pane. You can search by description, alert code, or time period. When setting the date/time range for your search, keep in mind that retrieving a large number of records can take some time.

The **Alert History** page lists the alerts matching the specified search criteria (up to 500). For each alert, it shows the start and end time, alert code, and description.

See also:

System Reports on page 395

Call History

The **Call History** page lets you view detailed records of calls and download CDRs (call detail records). The list includes point-to-point calls through Call Server and VMR calls through Conference Manager.

The search pane above the list lets you find calls matching the criteria you specify. Click the down arrow to expand the search pane. You can search for an originator or destination device by its name, alias, or IP address. You can limit your search by specifying one or more of the following:

- Cluster, territory, or site.
- Signaling type used in the call (H.323, SIP, or both)
- Registration status of the call originator.

The **Start After** and **Start Before** settings are always active and define the time range during which the calls to find begin. Optionally, use **End Before** to find only calls that ended by the specified time. Use **End After** to find calls that extended beyond the specified time; this is useful for finding very long calls. When setting the date/time range for your search, keep in mind that retrieving a large number of records can take some time.

Note: Call History in a Supercluster

You can also access the call history of a specific device by selecting it on the **Endpoints** page and clicking **View Call History**.

If a call traversed multiple clusters in a supercluster, each cluster contains some of its call history data. If one of those clusters is unavailable when you view the call's history, that history may be incomplete.

If a call traversed multiple clusters in a supercluster, it's counted as a single call, but it appears in the results of each cluster it touched when you search by cluster. Therefore, the sum of the number of calls for each cluster may be greater than the total number of calls for the entire supercluster.

How much historical data is available depends on the system's retention settings (see History Retention Settings on page 276), which can only be modified by a user with the Auditor role.

After you search for calls, the **Call History** page lists the calls in the time range you specified. If there are more than 500, the first page lists the first 500, and the arrow buttons below the list let you view other pages.

The **Export CDR Data** command (in the **Actions** list) lets you download call detail records (CDRs) for the time period you specify. See Call Detail Records (CDRs) on page 400.

The **Export Search Results** command lets you download just the records displayed on the page (the current search results). A **Save** dialog box prompts you to select a location for the downloaded file. The default filename is `CDRSearchExport.tar`. This is a troubleshooting feature. To aid in resolving a problem, Polycom Global Services may ask you to use specific search criteria to retrieve certain call records, download them, and send the file to them for analysis of the records.

The **Show Call Details** command opens the **Call Details** dialog box, which provides detailed information about the selected call. See Call Details Dialog Box on page 88

When you select a call associated with a conference, the **Display Conference** command lets you switch from the **Call History** page to the **Conference History** page, displaying the associated conference.

The following table describes the fields in the list.

Column	Description
Originator	The originating device's display name, name, alias, or IP address (in that order of preference), depending on what it provided in the call signaling. If the originator is an MCU, the MCU name.
Dial String	Dial string sent by originator, when available.
Destination	The destination device's display name, name, alias, or IP address (in that order of preference), depending on what it provided in the call signaling. If the destination is an MCU, the MCU name; if a VSC, the VSC value (not including the VSC).
Start Time	Time the call began (first signaling event).
End Time	Time the call ended (session closed).

Column	Description
Ingress Cluster	The cluster (first, if more than one) that handled the call.
Call ID	Unique identifier for the call.

Export History

The **Call History** page's **Export History** list provides a record of the CDR exports (all call and conference data for the specified period) and search results exports from the system. It appears when you click the **Show Export History** command (in the **Actions** list).

Note: Export History Always Shows All Export Operations
The **Export History** list is the same on the **Call History** and **Conference History** pages. In both places, all export operations are shown.

The following table describes the fields in the list. Hover over a field to see a tooltip showing the time span included in the export.

Column	Description
User	User ID of the person who performed the export.
Export Type	One of the following: • **CDR** for CDR exports • **Call History** for search results exports
Date of Export	Date and time of the export.
Cluster	The cluster from which the export took place.

See also:

System Reports on page 395
Call Detail Records (CDRs) on page 400

Conference History

The **Conference History** page lets you view detailed records of conferences and download CDRs (call detail records).

The fields at the top of the page let you specify the starting and ending date and time or the conference room number (VMR number) for which you want to view conference records.

When setting the date/time range for your search, keep in mind that retrieving a large number of records can take some time.

After you search for conferences, the **Conference History** page lists all the conferences in the time range you specified. If there are more than 500, the first page lists the first 500, and the arrow buttons below the list let you view other pages. The following table describes the fields in the list.

Column	Description
Conference Room ID	The conference room ID.
Start Time	Time the conference began (first conference event).
End Time	Time the conference ended (last conference event).
Cluster	The cluster that handled the conference.

Export History

The **Conference History** page's **Export History** list provides a record of the CDR exports (all call and conference data for the specified period) and search results exports from the system. It appears when you click the **Show Export History** command (in the **Actions** list).

Note: Export History Always Shows All Export Operations
The **Export History** list is the same on the **Call History** and **Conference History** pages. In both places, all export operations are shown.

The following table describes the fields in the list. Hover over a field to see a tooltip showing the time span included in the export.

Column	Description
User	User ID of the person who performed the export.
Export Type	One of the following: • **CDR** for CDR exports • **Call History** for search results exports
Date of Export	Date and time of the export.
Cluster	The cluster from which the export took place.

Associated Calls

The **Associated Calls** list shows all the calls associated with the selected conference. The following table describes the fields in the list.

Column	Description
Call ID	Unique identifier for the call.
Start Time	Time the call began (first signaling event).
End Time	Time the call ended (session closed).
Originator	The originating device's display name, name, alias, or IP address (in that order of preference), depending on what it provided in the call signaling. If the originator is an MCU, the MCU name.

Column	Description
Destination	The destination device's display name, name, alias, or IP address (in that order of preference), depending on what it provided in the call signaling. If the destination is an MCU, the MCU name; if a VSC, the VSC value (not including the VSC).
Cluster	The cluster (first, if more than one) that handled the call.

The **Display Call History** command (in the **Actions** list) takes you to the **Call History** page and displays the call that was selected in the **Associated Calls** list.

Conference Events

The **Conference Events** list provides much more detail about the selected conference, listing every state change and call event in the course of the conference. The following table describes the fields in the list.

Column	Description
Name	Name of the event.
Attributes	Information about the event (varies with the event type).
Call UUID	Call identifier (if call event).
Time	Date and time of the event.
Sequence	Identifies when in the order of changes to this conference this event occurred.

When you select a conference event with a call UUID, the **Display Call History** command (in the **Actions** list) takes you to the **Call History** page and displays the associated call.

Property Changes

The **Property Changes** list provides more information about the selected conference, listing every change in the value of a conference property during the course of the conference. The following table describes the fields in the list.

Column	Description
Name	Name of the call property.
Value	Value assigned to the property.
Time	Date and time of the property change.
Sequence	Identifies when in the order of changes to this call this property change occurred.

See also:

System Reports on page 395
Call History on page 395

Call Detail Records (CDRs)

In addition to the online call and conference history reports, the Polycom RealPresence DMA system generates call detail records (CDRs) for all calls and conferences, which you can download.

The procedure for exporting CDRs and the record layouts are described in the sections that follow.

Exporting CDR Data

From the **Call History** or **Conference History** page, you can use the **Export CDR Data** command to download call detail records (CDRs) for the time period you specify.

To download CDRs

1. Go to **Reports > Call History** (or **Conference History**).
2. In the **Actions** list, click **Export CDR Data**.
3. In the **Export Time Frame** dialog box, set the **Start Date** and time and the **End Date** and time you want to include.

   The defaults provide all CDR data for the current day. Times and dates are in the time zone of your browser.
4. Click **OK**.

   A **Save** dialog box prompts you to select a location for the downloaded file. The default filename is `cdrExport.zip`, but you can change that.
5. Choose a path and filename for the CDR file and click **Save**.

   The **File Download** dialog shows the progress.
6. When the download is complete, click **Close**.

After you unzip the download file, you can open the two CSV files it contains (one for calls and one for conferences) with Microsoft Excel or another spreadsheet application. The CSV files contain a line for each call or conference during the selected time frame.

The ZIP file also includes a text file that contains a single line specifying:

- The number of calls in the call CDR file.
- The number conferences in the conference CDR file.
- The clusters whose calls and conferences are included in the CDR file.
- The clusters whose calls and conferences are excluded from the CDR file because those clusters were not reachable when the CDR export was generated.

Call Record Layouts

The following table describes the fields in the call records.

Field values are enclosed in double quotes if:

- They begin or end with a space or tab (`" value"`).
- They contain a comma (`"Smith, John"`).
- They contain a double quote. In that case each double quote is also preceded by a double quote (`"William ""Bill"" Smith"`).

Note: ITP Systems and CDRs

For Polycom and Cisco Immersive Telepresence (ITP) rooms using Cisco TIP signaling, all the codecs (endpoint devices in the room) signal using a single session, producing a single CDR.

For Polycom ITP systems using SIP signaling (but not H.323), if the codecs follow the prescribed naming convention (see Naming ITP Systems Properly for Recognition by the Polycom RealPresence DMA System on page 95), the RealPresence DMA system recognizes them as constituting a single ITP system and creates a single CDR for the ITP system rather than separate CDRs for each of its codecs:

- The first three fields in the CDR (version, type, callType) contain a single value associated with the primary (sequence number 1) codec.
- The remaining fields contain an escaped (quote-enclosed) comma-separated list of values, one for each codec in the ITP system.

Be aware that when the .csv file is opened using Microsoft Excel, Excel may misinterpret a comma-separated list of numeric values as a single large integer.

Times and dates in the CDR file are expressed in the time zone of the RealPresence DMA cluster that created the CDR export, with the GMT offset shown at the end. Note that if a conference spans a daylight savings time change, the offset for `endTime` will be different from the offset for `startTime`.

Field	Description
version	Changes each time the format of CDRs changes.
type	CALL
callType	One of the following: • PT-PT • VMR • VEQ • VSC-hunt group • VSC-[uncond fwd | fwd busy | fwd no answer] • VMR-subscribe only • VMR-Lync AVMCU
callUuid	Unique identifier for the call.
dialin	If this is point-to-point or a VMR dial-in call, TRUE. Otherwise, FALSE.
startTime	`YYYY-MM-DDTHH:MM:SS.FFF[+|-|Z][HH:MM]` (ISO 8601 syntax, where FFF is milliseconds and Z is zero offset) This is when call signaling reached the RealPresence DMA system, not when media started. If multiple call records, the start of this segment of the call.
endTime	`YYYY-MM-DDTHH:MM:SS.FFF[+|-|Z][HH:MM]` (ISO 8601 syntax, where FFF is milliseconds and Z is zero offset) This is when the RealPresence DMA system's involvement with the call ended, not when media ended. If multiple call records, the end of this segment of the call.
origEndpoint	The originating endpoint's display name, name, alias, or IP address (in that order of preference), depending on what it provided in the call signaling. If the originator is an MCU, the MCU name.

Field	Description
dialString	Initial dial string as supplied by the originator. If multiple call records, this value is the same across all segments of the call.
destEndpoint	The destination endpoint's display name, name, alias, or IP address (in that order of preference), depending on what it provided in the call signaling. If the destination is an MCU, the MCU name; if a VSC, the VSC value (not including the VSC character).
origSignalType	One of the following: • h323 • sip
destSignalType	One of the following: • h323 • sip
refConfUUID	If VMR call, confUUID of the associated conference.
lastForwardEndpoint	If call forwarding, endpoint that forwarded call to the final destination endpoint.
cause	Cause value for call termination or termination of this CDR. This may not be the end of the call.
causeSource	Source of the termination of the call record: • originator • destination • callserver
bitRate	Bit rate for call, in kbps. If the bit rate changes during the call, this is a list of bit rate values separated by plus signs (+). For instance: `1024+768+384`
classOfService	Class of service for the call: • Gold • Silver • Bronze
ingressCluster	The RealPresence DMA cluster of the originating endpoint or entry point from a neighbor or SBC.
egressCluster	The RealPresence DMA cluster of the destination endpoint or exit point to a neighbor or SBC.
VMRCluster	The RealPresence DMA cluster handling the VMR, or blank if not a VMR call.
VEQCluster	The RealPresence DMA cluster handling the VEQ, or blank if no VEQ.
userRole	If VMR call, the role of the caller in conference: • PARTICIPANT • CHAIRPERSON (entered passcode) Null if not VMR call.

Field	Description
userDataA	The value from the **User pass-through to CDR** field of the user associated with the endpoint (see Edit User Dialog Box on page 307). For point-to-point calls, this is the user associated with the endpoint that started this call.
userDataB	For VMR calls, the value from the **Conference room pass-through to CDR** field of the conference room (VMR) to which the call connected (see Edit Conference Room Dialog Box on page 317). For point-to-point calls, the value from the **User pass-through to CDR** field of the user associated with the endpoint that received this call.
userDataC	For VMR calls, the dial-out participant pass-through value provided via the API, if any. For point-to-point calls, not currently used.
userDataD	Not currently used.
userDataE	Not currently used.
failureSignalingCode	For SIP calls, the SIP code and reason, separated by a colon, that the call was disconnected. For instance: `486:BUSY HERE`
origModel	The hardware model of the originating device, if available from the device's registration or other signaling.
origVersion	The software version of the originating device, if available from the device's registration or other signaling.
destModel	The hardware model of the destination device, if available from the device's registration or other signaling.
destVersion	The software version of the destination device, if available from the device's registration or other signaling.
displays	For an immersive telepresence room, the number of screens the room has. For a Polycom SIP ITP call, this is determined from the system name; for a Polycom or Cisco TIP call, it's the `x-cisco-multiple-screen` parameter value. For all other calls, the value is 1. **Note:** If a Polycom ITP room doesn't follow the ITP naming convention (see Naming ITP Systems Properly for Recognition by the Polycom RealPresence DMA System on page 95), this field may contain inaccurate information.
minVideoResolution	The minimum vertical resolution used on the video channel, followed by the minimum frame rate while at the minimum resolution, as reported by the MCU at the end of the call. For instance: `480p15` Zero (0) if the call was audio only. Available only for AVC calls using SIP or TIP signaling to a version 8.1 or newer hardware-based Polycom MCU with MPMx cards. Otherwise, blank.

Field	Description
maxVideoResolution	The maximum vertical resolution used on the video channel, followed by the maximum frame rate while at the maximum resolution, as reported by the MCU at the end of the call. For instance: `720p30` Zero (0) if the call was audio only. Available only for AVC calls using SIP or TIP signaling to a version 8.1 or newer hardware-based Polycom MCU with MPMx cards. Otherwise, blank.
videoPeakJitter	The peak jitter (in milliseconds) on the video channel. Zero (0) if the call was audio only. Available only for AVC calls using SIP or TIP signaling to a version 8.1 or newer hardware-based Polycom MCU with MPMx cards. Otherwise, blank.
videoTotalPackets	The total number of packets sent on the video channel. Zero (0) if the call was audio only. Available only for AVC calls using SIP or TIP signaling to a version 8.1 or newer hardware-based Polycom MCU with MPMx cards. Otherwise, blank.
videoTotalLostPackets	The number of packets lost on the video channel. Zero (0) if the call was audio only. Available only for AVC calls using SIP or TIP signaling to a version 8.1 or newer hardware-based Polycom MCU with MPMx cards. Otherwise, blank.
minContentResolution	The minimum vertical resolution used on the content channel, followed by the minimum frame rate while at the minimum resolution, as reported by the MCU at the end of the call. Zero (0) if content was not shared. Available only for AVC calls using SIP or TIP signaling to a version 8.1 or newer hardware-based Polycom MCU with MPMx cards. Otherwise, blank.
maxContentResolution	The maximum vertical resolution used on the content channel, followed by the maximum frame rate while at the maximum resolution, as reported by the MCU at the end of the call. Zero (0) if content was not shared. Available only for AVC calls using SIP or TIP signaling to a version 8.1 or newer hardware-based Polycom MCU with MPMx cards. Otherwise, blank.
contentPeakJitter	The peak jitter (in milliseconds) on the content channel. Zero (0) if content was not shared. Available only for AVC calls using SIP or TIP signaling to a version 8.1 or newer hardware-based Polycom MCU with MPMx cards. Otherwise, blank.
contentTotalPackets	The total number of packets sent on the content channel. Zero (0) if content was not shared. Available only for AVC calls using SIP or TIP signaling to a version 8.1 or newer hardware-based Polycom MCU with MPMx cards. Otherwise, blank.
contentTotalLostPackets	The number of packets lost on the content channel. Zero (0) if content was not shared. Available only for AVC calls using SIP or TIP signaling to a version 8.1 or newer hardware-based Polycom MCU with MPMx cards. Otherwise, blank.

Field	Description
origSignalingId	For SIP point-to-point or VMR calls (dialin=TRUE), the complete From header of the INVITE received from the endpoint. For VMR SIP dial-outs (dialin=FALSE), the To header sent by the RealPresence DMA system to the MCU. Otherwise, blank.
origCallId	The SIP or H.323 call ID of the call between the originating endpoint and the RealPresence DMA system. For VMR dial-outs, the call ID of the call between the RealPresence DMA system and the MCU.
destCallId	The SIP or H.323 call ID of the call between the destination endpoint and the RealPresence DMA system. For calls to a VMR, the call ID of the call between the RealPresence DMA system and the MCU.
chairPasscode	The configured chairperson passcode for the conference room. Blank if no passcode was configured at the time of the conference.
confRequiresChair	TRUE if the conference template used for the conference has the **Conference requires chairperson** flag enabled. Otherwise, FALSE.
termConfAfterChairDrops	TRUE if the conference template used for the conference has the **Terminate conference after chairperson drops** flag enabled. Otherwise, FALSE.
charJoinTime	The time the first chairperson joined the conference. If no chairperson joined the conference, blank.

Conference Record Layouts

The following table describes the fields in the conference records.

Values are enclosed in double quotes when necessary, using the same rules as for call records.

Times and dates in the CDR file are expressed in the time zone of the RealPresence DMA cluster that created the CDR export, with the GMT offset shown at the end. Note that if a conference spans a daylight savings time change, the offset for `endTime` will be different from the offset for `startTime`.

Field	Description
version	Changes each time the format of CDRs changes.
type	CONF
confType	One of the following: • PCO — for Polycom Conferencing for Outlook (calendared) conferences • LYNC — for Lync conferences • AD-HOC — for all other conferences
cluster	The RealPresence DMA cluster serving the VMR.
confUUID	Unique identifier for the conference.
startTime	`YYYY-MM-DDTHH:MM:SS.FFF[+|-|Z][HH:MM]` (ISO 8601 syntax, where FFF is milliseconds and Z is zero offset) This is when the first participant joined the conference.

Field	Description
endTime	`YYYY-MM-DDTHH:MM:SS.FFF[+|-|Z][HH:MM]` (ISO 8601 syntax, where FFF is milliseconds and Z is zero offset) This is when the last participant left the conference.
userID	Conference room (VMR) owner, shown as: domain\user Domain is LOCAL for non-AD users. If this is a Lync conference, this field is empty.
roomID	Conference room (VMR) number or Lync conference ID.
partCount	Maximum number of concurrent calls in the conference (high water mark). Doesn't include audio-only IVR dial-outs or participants dialed directly into or out from the MCU without going through the RealPresence DMA sytem. The following are counted as a single participant: • A Polycom or Cisco immersive telepresence room using Cisco TIP signaling. • A Polycom ITP room using SIP signaling and the prescribed naming convention (see Naming ITP Systems Properly for Recognition by the Polycom RealPresence DMA System on page 95).
classOfService	Class of service for the call: • Gold • Silver • Bronze
userDataA	The value from the **User pass-through to CDR** field of the user associated with the conference room (VMR) (see Edit User Dialog Box on page 307).
userDataB	The value from the **Conference room pass-through to CDR** field of the conference room (VMR) (see Edit Conference Room Dialog Box on page 317).
userDataC	The conference ID provided via the API, if any.
maxResourcesUsed	The maximum number of video and voice ports used for the conference, reported as follows: video: <video port count> voice: <voice port count> Available only for conferences on a RealPresence Collaboration Server or RMX MCU that provides this information. **Note:** Voice calls may use video ports if voice ports aren't available. **Note:** The RealPresence DMA system reports port numbers based on resource usage for CIF calls. Version 8.1 and later Polycom MCUs report port numbers based on resource usage for HD720p30 calls. In general, 3 CIF = 1 HD720p30, but it varies depending on bridge/card type and other factors. See your Polycom RealPresence Collaboration Server or RMX system documentation for more detailed information about resource usage.

Field	Description
mcuNameList	The MCU(s) used by the conference. If there is more than one (due to cascading or an MCU failover), this is a comma-separated list enclosed in quotes. If the conference was cascaded, the hub MCU is listed first. If there was a failover, the original MCU is listed first.
confDisplayNameList	The conference display name of the conference as it appears on the MCU. If there is more than one MCU (due to cascading or an MCU failover), this is a comma-separated list enclosed in quotes. If the conference was cascaded, the display name from the hub MCU is listed first. If there was a failover, the display name from the original MCU is listed first. This information is included to support the correlation of RealPresence DMA CDRs with CDRs on the MCU. Polycom MCUs use the conference display name as part of the name of the CDR file for a conference.
chairPasscode	The configured chairperson passcode for the conference room. Blank if no passcode was configured at the time of the conference.
confRequiresChair	TRUE if the conference template used for the conference has the **Conference requires chairperson** check box enabled. Otherwise, FALSE.
termConfAfterChairDrops	TRUE if the conference template used for the conference has the **Terminate conference after chairperson drops** check box enabled. Otherwise, FALSE.
charJoinTime	The time that the first chairperson joined the conference. If no chairperson joined the conference, blank.

See also:

System Reports on page 395
Call History on page 395
Conference History on page 397

Registration History Report

If the Polycom RealPresence DMA system Call Server is providing H.323 gatekeeper or SIP registrar services, the **Registration History** page provides access to information about registered devices. It also provides information about external SIP peers with which the system is registered, if any.

The search pane above the list lets you find registrations matching the criteria you specify. Click the down arrow to expand the search pane. You can search for a device by its alias or IP address. You can limit your search by specifying one or more of the following:

- Owner, territory, or site.
- Signaling protocol (H.323 or SIP).
- Registration status.
- Device type (endpoint or gateway).

The start and end time options provide complete flexibility in defining the time range in which you're interested, letting you specify registration start time criteria, registration end time criteria, or both. When

setting the date/time range for your search, keep in mind that retrieving a large number of records can take some time.

Note: Viewing Registration History
You can also access the registration history of a specific device by selecting it on the **Endpoints** page and clicking **View Registration History**.

The registrations that match your search criteria are listed below the search fields. In the **Actions** list, the **Show Detail**s command displays the **Registration Details** and the **Events and Signaling Messages** tabs below the list, enabling you to see:

- Detailed information about the selected device's registration status and information.
- A history of the registration signaling and processing, including the results of applying the registration policy script, if any (see Registration Policy on page 264).

The following table describes the fields in the list.

Column	Description
Name	The name of the registered device.
Alias	The device's alias.
Start Time	The time and date that the device registered.
End Time	The time and date that the device's registration ended (blank if the device is still registered).
Registration Status	The registration status: • Active • Rejected • Terminated by call server • Terminated by endpoint • Timed out

Registration History Procedures

To find a device or devices

1 Go to **Reports > Registration History**.

The **Registration History** page appears.

2 For a simple search of the current day's registration history, enter a search string in the **Alias** or **IP address** field.

The system matches any string you enter against the beginning of the values for which you entered it. If you enter "10.33.17" in the **IP address** field, it displays devices whose IP addresses are in that subnet. Leave a field empty to match all values. To search for a string not at the beginning of the field, you can use an asterisk (*) as a wildcard.

3 For more search options, click the down arrow to the left.

The search panel expands, revealing a complete set of registration start and end time options and the **Territory**, **Owner**, **Site**, **Protocol**, **Status**, and **Device Type** filters.

4 Optionally, specify a start or end time range and any filter criteria you want to use. Then click **Search**.

The system displays the devices matching your search criteria.

See also:

System Reports on page 395

Call History on page 395

Conference History on page 397

Active Directory Integration Report

If the Polycom RealPresence DMA system is integrated with your Active Directory, it reads the Active Directory daily to refresh the information in its cache. It also rereads the directory whenever you update the directory integration settings (**Admin > Integrations > Microsoft Active Directory**).

For each cache update, the system generates an integration report.

The **Active Directory Integration** page reports the status for the last cache update, shows contact results for each domain in the forest, and lists any groups for which it was unable to retrieve membership information.

Note: Enterprise vs. Local Users

You must be an enterprise user (with the appropriate user role assignments) to see the Active Directory integration report. A local user can't access this page, regardless of user roles.

The following table describes the information displayed at the top of the page and the fields in the two lists.

Field	Description
Status	**OK** indicates that the cluster successfully connected to the Active Directory during the last update. A padlock indicates that the connection was encrypted.
User and group cache	Shows the state of the cluster's cache of directory data and when it was last updated.
Server name	The Active Directory server from which the Polycom RealPresence DMA system retrieved the directory data it needs.
Connected to global catalog	Indicates whether the cluster connected to a global catalog server. If it did, but some attributes were not in the global catalog, that's noted. Those attributes were retrieved from the domain controllers, and the results of that process are reported in the **All Domains** list below.
Forest root DN	Shows the distinguished name of the Active Directory forest root domain.

Field	Description
Site	The Active Directory site name for the system. Available only if **Auto-discover from FQDN** (serverless bind) is selected on the Microsoft Active Directory® Integration page. If serverless bind is enabled, but no site is retrieved, the reason could be: • **Site could not be determined**: the system's subnet isn't mapped to a site (see http://support.microsoft.com//kb/889031). • **Auto-discover failed or is disabled**: could be problem with DNS domain name or missing SRV records on DNS server.
All Domains	
Domain Name	Name of the domain. All domains in the forest are listed, whether or not they're used by the system.
Domain DN	Distinguished name of the domain.
Domain Server	Fully qualified domain name of the server.
Status	Indicates if the system contacted a domain controller in that domain (in order to retrieve attributes not in the global catalog or to get member information for its global groups) and the results: • **Not required**: no groups from that domain have been imported into the Polycom RealPresence DMA system and all attributes needed were in the global catalog. • **Partially loaded** or **Unable to load**: see **Error Message** and the list of groups with incomplete information for more details. Displays an error message if the domain server couldn't be contacted. This can happen if the DNS server resolves the name to an IP address that isn't valid or is temporarily unavailable. Return to the **Active Directory Integration** page and try again. If the system repeatedly fails to contact a domain, troubleshoot your network.
Groups with Partially Loaded or No Membership Information	
Group Name	Name of a global group whose member information is incomplete. This includes groups that directly or indirectly contain groups whose member information is incomplete. Groups with members in multiple domains that couldn't be contacted are listed for each.
Domain	Domain to which the group belongs.
Description	Description of the group.

See also:

Microsoft Active Directory® Integration on page 152

Active Directory Integration Procedure on page 157

Orphaned Groups and Users Report on page 411

Conference Room Errors Report on page 412

Enterprise Passcode Errors Report on page 414

Orphaned Groups and Users Report

If the Polycom RealPresence DMA system is integrated with your Active Directory, it generates an orphaned groups and users report whenever you manually update the directory connection (**Admin > Integrations > Microsoft Active Directory**) and when the system updates automatically to refresh its cache.

The **Orphaned Groups and Users** page reports information about enterprise users and groups that are no longer in the Active Directory or are no longer accessible to the Polycom RealPresence DMA system, but for which the system has local data (typically, local conference rooms or customized enterprise conference rooms).

Orphaned data is no longer usable by the system, so you can generally delete it. But first make sure that the system is successfully integrated to the correct active directory domain. Switching domains can cause many users and groups to be orphaned.

The following table describes the fields in the two lists.

Field	Description
Orphaned Groups	
Group ID	ID of the user group.
Domain	Domain to which the user group belonged.
Orphaned Users	
User ID	ID of the user.
First Name	The user's first name.
Last Name	The user's last name.
Domain	Domain to which the user belonged.
Roles	Polycom RealPresence DMA system user roles assigned to the user.
Conference Rooms	Polycom RealPresence DMA system custom conference rooms assigned to the user.

Orphaned Groups and Users Procedures

To remove orphaned group data from the system

1. Go to **Reports > Orphaned Groups and Users**.
2. In the **Actions** list, click **Clean Orphaned Groups**.
3. When prompted to confirm, click **OK**.

   The system removes the orphaned group data.

To remove orphaned user data from the system

1. Go to **Reports > Orphaned Groups and Users**.
2. In the **Actions** list, click **Clean Orphaned Users**.

3 When prompted to confirm, click **OK**.

The system removes the orphaned user data.

See also:

Microsoft Active Directory® Integration on page 152

Active Directory Integration Report on page 409

Enterprise Passcode Errors Report on page 414

Conference Room Errors Report

If the Polycom RealPresence DMA system is integrated with your Active Directory, it can create a conference room (virtual meeting room) for each enterprise user. See Microsoft Active Directory® Integration on page 152.

The Polycom RealPresence DMA system reads the Active Directory daily to refresh the information in its cache. It also rereads the directory whenever you update the directory integration settings (**Admin > Integrations > Microsoft Active Directory**).

If the directory integration settings are configured to generate conference room IDs for enterprise users, the Polycom RealPresence DMA system retrieves the values from the designated directory attribute and removes the specified characters from them. If the resulting room ID is longer than the specified maximum, it strips the excess characters from the beginning of the string.

The **Conference Room Errors** page reports the conference room ID generation status and lists the problem IDs.

Note: Enterprise vs. Local Users

You must be an enterprise user (with the appropriate user role assignments) to see the conference room errors report. A local user can't access this page, regardless of user roles.

The summary at the top of the report shows when it was generated (check this to verify that the report you're viewing reflects the most recent update of the cache) and the following information:

- Total number of users found
- Number of users with valid conference room IDs

  If you don't specify a directory attribute from which to generate conference room IDs, this number is zero and the report contains nothing else of value.
- Number of users for whom the Active Directory field being used to generate conference room IDs is empty (these are counted, but not listed individually below; find them in the Active Directory)
- Number of users with blank conference room IDs (doesn't include those for whom the Active Directory field was empty, only those for whom its contents were filtered out)
- Number of users with invalid conference room IDs
- Number of users with duplicate conference room IDs

The blank, invalid, and duplicate conference room IDs are listed below.

Note: Duplicate Conference Room IDs
Duplicate conference room IDs are not disabled; they can be used for conferencing. But if both users associated with that conference room ID try to hold a conference at the same time, they end up in the same conference.

The following table describes the fields in the list.

Column	Description
Problem	Description of the issue with this room ID (*Blank*, *Duplicate*, or *Invalid*).
Conference Room ID	The conference room ID, typically generated from the enterprise user's phone number.
<directory attribute>	The attribute (field) from the Active Directory that's used to generate the room ID (see Microsoft Active Directory® Integration on page 152). The column heading is the name of the attribute, such as **telephoneNumber**.
User ID	The login name or ID of the enterprise user with this room ID.
Domain	The domain to which the enterprise user belongs.
Last Name	The enterprise user's last name.
First Name	The enterprise user's first name.
Notes	For duplicates, identifies the domain and user ID of the user with a duplicate conference room ID.

Exporting Conference Room Errors Data

From the **Conference Room Errors** page, you can use the **Export Room Errors Report** command to download a CSV (comma-separated values) file containing all the data in the conference room errors report.

To download conference room errors data

1. Go to **Reports > Conference Room Errors**.
2. In the **Actions** list, click **Export Room Errors Report**.
3. In the **Exporting Conference Room Errors Report** dialog box, click **Download**.
4. Choose a path and filename for the file and click **Save**.

   The **File Download** dialog shows the progress.
5. When the download is complete, click **Close**.

You can open the CSV file with Microsoft Excel or another spreadsheet application. The file contains the same data you see displayed on the **Conference Room Errors** page.

See also:

Microsoft Active Directory® Integration on page 152
Active Directory Integration Report on page 409
Orphaned Groups and Users Report on page 411

Enterprise Passcode Errors Report

If the Polycom RealPresence DMA system is integrated with your Active Directory, conference and chairperson passcodes for enterprise users can be maintained in the Active Directory. See Adding Passcodes for Enterprise Users on page 162.

The Polycom RealPresence DMA system reads the Active Directory daily to refresh the information in its cache. It also rereads the directory whenever you update the directory integration settings (**Admin > Integrations > Microsoft Active Directory**).

If the directory integration settings are configured to generate passcodes for enterprise users, the Polycom RealPresence DMA system retrieves the values from the designated directory attributes and removes any non-numeric characters from them. If the resulting numeric passcode is longer than the specified maximum for that passcode type, it strips the excess characters from the beginning of the string.

The **Enterprise Passcode Errors** page reports the passcode generation status and lists the users with passcode errors.

Note: Enterprise vs. Local Users
You must be an enterprise user (with the appropriate user role assignments) to see the enterprise passcode errors report. A local user can't access this page, regardless of user roles.

The summary at the top of the report shows when it was generated (check this to verify that the report you're viewing reflects the most recent update of the cache), the directory server accessed, and the following information:

- Number of users in the directory
- Number of users with duplicate chairperson and conference passcodes

Note: Duplicate Passcodes
For users with duplicate passcodes, the system ignores the conference passcode, but honors the chairperson passcode.

- Number of users with valid, invalid, and unassigned chairperson passcodes and the directory attribute on which they're based, along with the number of users with locally overridden chairperson passcodes
- Number of users with valid, invalid, and unassigned conference passcodes and the directory attribute on which they're based, along with the number of users with locally overridden conference passcodes

The users with invalid passcodes are listed below.

The following table describes the fields in the list.

Column	Description
Problem	Indicates what the problem is: Chairperson, Conference, or Duplicate.
User ID	The login name or ID of the enterprise user with this passcode error.
Domain	The domain to which the enterprise user belongs.
Last Name	The enterprise user's last name.

Column	Description
First Name	The enterprise user's first name.
Notes	For an invalid passcode, shows the generated value (after the system stripped non-numeric characters out of the attribute value and truncated it if necessary). For duplicate chairperson and conference passcodes, shows the raw attribute value of each and the duplicate value generated (after stripping non-numeric characters and truncating if necessary).

Exporting Enterprise Passcode Errors Data

From the **Conference Room Errors** page, you can use the **Export Enterprise Passcode Errors Report** command to download a CSV (comma-separated values) file containing all the data in the enterprise passcode errors report.

To download enterprise passcode errors data

1. Go to **Reports > Enterprise Passcode Errors**.
2. In the **Actions** list, click **Export Enterprise Passcode Errors Report**.
3. In the **Exporting Enterprise Passcode Errors Report** dialog box, click **Download**.
4. Choose a path and filename for the file and click **Save**.

   The **File Download** dialog shows the progress.
5. When the download is complete, click **Close**.

You can open the CSV file with Microsoft Excel or another spreadsheet application. The file contains the same data you see displayed on the **Enterprise Passcode Errors** page.

See also:

Microsoft Active Directory® Integration on page 152

Adding Passcodes for Enterprise Users on page 162

Active Directory Integration Report on page 409

Orphaned Groups and Users Report on page 411

Conference Room Errors Report on page 412

Network Usage Report

The **Network Usage** page displays historical usage data about the video network and enables you to export that data.

The search criteria at the top of the page let you select:

- The start time and span/granularity you want included.
- The cluster, territory, or throttlepoint (site, site link, or subnet) whose data you want to see.
- The specific call, QoS, and bandwidth data you want to see.

The data matching the criteria you chose is graphed below.

Exporting Network Usage Data

From the **Network Usage** page, you can use the **Export Network Usage Data** command to download a CSV (comma-separated values) file containing all the network usage data point records for the time period you specify.

The system retains the most recent 8 million data points.

The file includes a network usage data point record for each throttlepoint, territory, and cluster for each minute of the time period. It doesn't include usage data for MPLS clouds, the default internet site, or sites not controlled by the system.

The following table describes the fields in the records.

Field	Description
name	Name of the throttlepoint, territory, or cluster that defines the scope being measured.
date	Minutes since 1970 (Java time / 60,000).
calls_started	Number of calls started in the scope during the time interval.
calls_ended	Number of calls ended in the scope during the time interval.
calls_dropped	Number of calls rejected or evicted due to bandwidth limits at the throttlepoint during the time interval. The calls dropped measure is intended to help with understanding network congestion. So, it includes calls dropped due to available bandwidth at the throttlepoint, but not calls dropped due to per call bitrate limits at the throttlepoint.
calls_downspeeded	Number of calls downspeeded due to bandwidth limits at the throttlepoint during the time interval. The calls downspeeded measure is intended to help with understanding network congestion. So, it includes calls downspeeded due to available bandwidth at the throttlepoint, but not calls downspeeded due to per call bitrate limits at the throttlepoint.
bitrate_limit	The (maximum) configured bitrate limit for the scope during the time interval, or -1 if no limit was configured (kbps).
bandwidth_limit	The (maximum) configured bandwidth limit for the scope during the time interval, or -1 if no limit was configured (kbps).
bandwidth_usage	The (maximum) used bandwidth for the scope during the time interval (kbps).
bandwidth_usage_percent	The (maximum) percentage of the bandwidth limit used for the scope during the time interval (kbps).
packet_loss_percent	Mean packet loss percentage of all QoS reports in the scope during the time interval.
avg_video_jitter	Mean jitter of all QoS reports of all video channels in the scope during the time interval (milliseconds).
max_video_jitter	Maximum jitter of all QoS reports of all video channels in the scope during the time interval (milliseconds).
avg_video_delay	Mean delay of all QoS reports of all video channels in the scope during the time interval (milliseconds).

Field	Description
max_video_delay	Maximum delay of all QoS reports of all video channels in the scope during the time interval (milliseconds).
avg_audio_jitter	Mean jitter of all QoS reports of all audio channels in the scope during the time interval (milliseconds).
max_audio_jitter	Maximum jitter of all QoS reports of all audio channels in the scope during the time interval (milliseconds).
avg_audio_delay	Mean delay of all QoS reports of all audio channels in the scope during the time interval (milliseconds).
max_audio_delay	Maximum delay of all QoS reports of all audio channels in the scope during the time interval (milliseconds).
gold_calls	Max concurrent Gold class calls in the scope during the time interval.
silver_calls	Max concurrent Silver class calls in the scope during the time interval.
bronze_calls	Max concurrent Bronze class calls in the scope during the time interval.
audio_calls	Max concurrent audio calls in the scope during the time interval.
calls_256Kbps	Max concurrent video calls with a bitrate less than or equal to 320kbps in the scope during the time interval.
calls_384Kbps	Max concurrent video calls with a bit rate greater than 320kbps and less than or equal to 448kbps in the scope during the time interval.
calls_512Kbps	Max concurrent video calls with a bit rate greater than 448kbps and less than or equal to 640kbps in the scope during the time interval.
calls_768Kbps	Max concurrent video calls with a bit rate greater than 640kbps and less than or equal to 896kbps in the scope during the time interval.
calls_1Mbps	Max concurrent video calls with a bit rate greater than 896kbps and less than or equal to 1.5Mbps in the scope during the time interval.
calls_2Mbps	Max concurrent video calls with a bit rate greater than 1.5Mbps and less than or equal to 3Mbps in the scope during the time interval.
calls_4Mbps	Max concurrent video calls with a bit rate greater than 3Mbps in the scope during the time interval.
sip_calls	Max concurrent calls using SIP signaling in the scope during the time interval.
h323_calls	Max concurrent calls using H.323 signaling in the scope during the time interval.
gateway_calls	Max concurrent calls using the SIP to H.323 gateway in the scope during the time interval.
conference_calls	Max concurrent Conference Manager calls in the scope during the time interval.

To download network usage data

1. Go to **Reports > Network Usage**.
2. In the **Actions** list, click **Export Network Usage Data**.
3. In the **Export Time Frame** dialog box, set the **Start Date** and time and the **End Date** and time you want to include.

   The defaults provide all network usage data for the current day.
4. Click **OK**.
5. Choose a path and filename for the network usage file and click **Save**.

   The **File Download** dialog shows the progress.
6. When the download is complete, click **Close**.

You can open the CSV file with Microsoft Excel or another spreadsheet application. The file contains a line for each data point.

See also:

System Reports on page 395

Call History on page 395

About Site Topology on page 278

Polycom RealPresence DMA System SNMP Support

This chapter provides a discussion of the Polycom® RealPresence® Distributed Media Application™ (DMA®) SNMP support. It includes these topics:

- SNMP Overview
- Configure SNMP
- Download MIBs

SNMP Overview

SNMP is an application-layer protocol that provides a message format for communication between SNMP managers and agents. SNMP provides a standardized framework and a common language used for the monitoring and management of resources in a network.

Support for SNMP and system logging are part of Polycom's management instrumentation solution. For detailed information on using the manageability instrumentation solution with your Polycom products, see the *Polycom RealPresence Manageability Instrumentation Solution Guide*.

This section includes the following topics:

- SNMP Framework
- SNMP Notifications
- SNMP Versions

SNMP Framework

The SNMP framework has three parts:

- An SNMP manager

  The SNMP manager is the system used to control and monitor the activities of network hosts using SNMP. A variety of network management applications are available for use with SNMP. It is important to note that you should understand how your SNMP management system is configured to properly configure your Polycom system SNMP transport protocol requirements, SNMP version requirements, SNMP authentication requirements, and SNMP privacy requirements. For information on using SNMP management systems, see the appropriate documentation for your application.

- An SNMP agent

  The SNMP agent is the software component within the Polycom system that maintains the data for the system and reports these data, as needed, to managing systems. The agent and MIB reside on the same system.

- A MIB

  The MIB (Management Information Base) is a virtual information storage area for network management information, which consists of collections of managed network objects. You can configure the SNMP agent for a particular system MIB. The agent gathers data from the MIB, the repository for information about system parameters and network data. Polycom systems include Polycom-specific MIBs with every system as well as third-party MIBs. Polycom MIBs are

self-documenting, including information about the purpose of specific traps and inform notifications. Third-party MIBs accessible through the Polycom system may include both hardware and software system MIBs.

SNMP Notifications

A key feature of SNMP is the ability to generate notifications from an SNMP agent. Notifications are called as such because they are sent, unsolicited and asynchronous to the SNMP manager from the Polycom system. Notifications can indicate improper user authentication, restarts, the closing of a connection, loss of connection to another system, or other significant events. They are generated as informs or trap requests.

Traps are messages alerting the SNMP manager to a system or network condition change. Inform requests (informs) are traps that include a request for a confirmation receipt from the SNMP manager. Traps are less reliable than informs because the SNMP manager does not send any acknowledgment when it receives a trap. However, informs consume more system and network resources. Traps are discarded as soon as they are sent. An inform request is held in memory until a response is received or the request times out. Traps are sent only once while informs may be retried several times.The retries increase traffic and contribute to a higher overhead on the network. Thus, traps and inform requests provide a trade-off between reliability and network resources.

SNMP Versions

Polycom supports two versions of SNMP:

- **SNMPv2c**—Polycom implements a sub-version of SNMPv2. SNMPv2c uses a community-based form of security. The community of SNMP managers able to access the agent MIB is defined by an IP-based Access Control List and password.

  One drawback of SNMPv2c is that it is subject to packet sniffing of the clear text community string from the network traffic, because it does not encrypt communications between the management system and SNMP agents.

- **SNMPv3**—Polycom implements the newest version of SNMP. Its primary feature is enhanced security. SNMPv3 provides secure access to systems with a combination of authenticating and encrypting packets over the network.The `contextEngineID` in SNMPv3 uniquely identifies each SNMP entity. The `contextEngineID` is used to generate the key for authenticated messages. Polycom implements SNMPv3 communication with authentication and privacy (the authPriv security level as defined in the USM MIB).
  - Authentication is used to ensure that traps are read by only the intended recipient. As messages are created, they are given a special key that is based on the `contextEngineID` of the entity. The key is shared with the intended recipient and used to receive the message.
  - Privacy encrypts the SNMP message to ensure that it cannot be read by unauthorized users.
  - Message integrity ensures that a packet has not been tampered with in transit.

Configure SNMP

The RealPresence DMA system uses SNMP to provide a standardized framework and a common language used monitoring and managing the system.

Note that you should understand how your SNMP management system is configured to properly configure the RealPresence DMA system’s SNMP transport protocol, version, authentication, and privacy settings.

To enable SNMP messaging you must perform the following:

- Enable the SNMP Agent
- Add an SNMP Notification User
- Add an SNMP Notification Agent

Enable the SNMP Agent

You can enable the SNMP Agent.

To enable the SNMP agent

1. Go to **Admin > Local Cluster > SNMP Settings**.
2. Configure the following settings for the connection between the RealPresence DMA system and the SNMP agent.

Setting	Description
SNMP Version	Specifies the version of SNMP you want to use. Specifies the transport protocol for SNMP communications. SNMP can be implemented over two transport protocol: **v2c**—Used for standard models. Uses community-based authentication. **v3**—Used when you want a high security model. Requires a security user for notifications. Because UDP doesn't have error recovery services, it requires fewer network resources. It is well suited for repetitive, low-priority functions like alarm monitoring.
Transport	Specifies the transport protocol for SNMP communications. SNMP can be implemented over two transport protocols: **TCP**—This protocol has error-recovery services, message delivery is assured, and messages are delivered in the order they were sent. Some SNMP managers only support SNMP over TCP. **UDP**—This protocol does not provide error-recovery services, message delivery is not assured, and messages are not necessarily delivered in the order they were sent. Because UDP doesn't have error recovery services, it requires fewer network resources. It is well suited for repetitive, low-priority functions like alarm monitoring.
Port	Specifies the port that the RealPresence DMA system uses for general SNMP messages. By default, the RealPresence DMA system uses port 161.
Community	For SNMPv2c, specifies the context for the information, which is the SNMP group to which the devices and management stations running SNMP belong. The RealPresence DMA system has only one valid context—by default, `public`—which is identified by this **Community** name. The RealPresence DMA system will not respond to requests from management systems that do not belong to its community.

Setting	Description
V3 Local Engine Id	For SNMPv3 only. Displays the RealPresence DMA system `contextEngineID` for SNMPv3.
Security User	For SNMPv3 only. Specifies the security name required to access a monitored MIB object. This name cannot be snmpuser.

3 Click **Update**.

Add an SNMP Notification User

The **Add Notification User** dialog box lets you add a security user authorized to receive notifications. For SNMPv3 notifications, a security user is required. When you add a notification agent, you select a security user from the list of notification users that have been added.

Notification users aren't needed or used for SNMPv2c.

To add a notification user

1 Go to **Admin > Local Cluster > SNMP Settings**.

2 Click **Add User**.

3 Configure the following settings in the **Add Notification User** dialog box.

Field	Description
Security user	The user name of the security user authorized to actively retrieve SNMP data.
Authentication type	The authentication protocol used to create unique fixed-sized message digests of a variable length message. The RealPresence DMA system implements communication with authentication and privacy (the `authPriv` security level, as defined in the USM MIB). Authentication type options: • MD5–Creates a digest of 128 bits (16 bytes) • SHA–Creates a digest of 160 bits (20 bytes) Both methods include the authentication key with the SNMPv3 packet and then generate a digest of the entire SNMPv3 packet.
Authentication password Confirm password	The authentication password that's used, together with the local engine ID, to create the authentication key included in the MD5 or SHA message digest.
Encryption type	The privacy protocol for the connection between the RealPresence DMA system and the SNMP agent. Encryption type options: • No encryption • DES–Uses a 56-bit key with a 56-bit salt to encrypt the SNMPv3 packet • AES–Uses a 128-bit key with a 128-bit salt to encrypt the SNMPv3 packet
Encryption password Confirm password	The password that's used, together with the local engine ID, to create the encryption key used by the privacy protocol.

4 Click **OK**.

The user displays in the **Notification Users** list.

Edit Notification User Dialog Box

The **Edit Notification User** dialog box lets you modify a security user authorized to receive SNMPv3 notifications.

Setting	Description
Security user	The security user name authorized to receive notifications (Traps or Informs).
Authentication type	The authentication protocol. These protocols are used to create unique fixed-size message digests of a variable length message. Possible values for authentication protocol are: • MD5—Creates a digest of 128 bits (16 bytes). • SHA—Creates a digest of 160 bits (20 bytes). Both methods include the authentication key with the SNMPv3 packet and then generate a digest of the entire SNMPv3 packet.
Authentication password Confirm password	The authentication password that's used, together with the local engine ID, to create the authentication key used by the MD5 or SHA message digest.
Encryption type	The privacy protocol for the connection between the DMA system and the SNMP agent: • DES—Uses a 56-bit key with a 56-bit salt to encrypt the SNMPv3 packet. • AES—Uses a 128-bit key with a 128-bit salt to encrypt the SNMPv3 packet.
Encryption password Confirm password	The password that's used, together with the local engine ID, to create the encryption key used by the privacy protocol.

Add an SNMP Notification Agent

The **Add Notification Agent** dialog box lets you add an SNMP agent to the system, specifying what kinds of notifications it sends and to whom. To limit the effect on system performance, a maximum of 8 agents may be defined.

To add an SNMP notification agent to the system

1 Click **Add Agent**.

2 Configure the settings in the **Add Notification Agent** dialog box.

Field	Description
Enable agent	Select to enable the notification agent. Clear to stop using this agent without deleting it.
Transport	The transport protocol for SNMP communications to the host receiver (TCP or UDP).
Address	The IP address of the host receiver (the SNMP manager to which this agent sends notifications).

Field	Description
Port	The port that the RealPresence DMA system uses to send notifications. Default port–162
Notification type	The type of notification that this agent sends to the notification receiver: • Inform–The agent sends an unsolicited message to a notification receiver and expects or requires the receiver to respond with a confirmation message. • Trap–The agent sends an unsolicited message to a notification receiver and does not expect or require a confirmation message.
SNMP version	The version of SNMP used for this agent (v2c or v3).
Security user	For SNMP v3, the user name of the security user authorized to actively retrieve SNMP data.

3 Click **OK**.

The agent appears in the **Notification Agents** list.

Edit Notification Agent Dialog Box

The **Edit Notification Agent** dialog box lets you enable, disable, or modify an SNMP notification agent.

The following table describes the fields in the dialog box.

Setting	Description
Enable agent	Enables the notification agent defined below. Clearing this check box lets you stop using this agent without deleting it.
Transport	The transport protocol for SNMP communications to the host receiver (TCP or UDP). See SNMP Overview on page 419.
Address	The IP address of the host receiver (the SNMP manager to whom this agent sends notifications).
Port	Specify the port that the DMA system will use to send notifications. By default, the DMA system uses port 162.
Notification type	The type of notification that this agent sends to the notification receiver: • Inform — The agent sends an unsolicited message to a notification receiver and expects/requires the receiver to respond with a confirmation message. Introduced with SNMP version 2c, this option is not supported by network management systems that only support SNMP version 1. • Trap—The agent sends an unsolicited message to a notification receiver and does not expect/require a confirmation message.
SNMP version	The version of SNMP supported (v2c or v3). See SNMP Versions on page 420.
Security user	For SNMPv3, the security user to receive notifications from this agent. The list contains the names of the security users in the **Notification Users** list.

Download MIBs

You can download any of the Polycom MIBs from the SNMP Settings page. Polycom recommends using a MIB browser to explore the DMA system MIB. The DMA system MIB is self-documenting, including information about the purpose of specific traps and inform notifications.

To download the MIB package for a DMA system

1. Go to **Admin > SNMP Settings**.
2. Click **Download MIBs**.
3. In the **MIBs** dialog box, select the MIB of interest and click **Download**.
4. Specify a name and location, and click **Save**.

See Available SNMP MIBs on page 425 for a description of the available MIBs on the DMA system.

Available SNMP MIBs

The following table describes the MIBs that are on the Polycom DMA system.

Name	Description
Polycom-specific	
JVM-MANAGEMENT-MIB	MIB for monitoring the state of the Java Virtual Machine.
POLYCOM-BASE-MIB	Base MIB for Polycom products.
POLYCOM-DMA-MIB	RealPresence DMA system-specific MIB.
POLYCOM-MCU-MANAGEMENT-MIB	MIB for monitoring MCUs in use with the system.
RFC1213-MIB	RFC1213 MIB definitions included for reference. The RealPresence DMA system supports all but `egp`.
SNMPv2-CONF	A definition file for standard conventions included for reference.
SNMPv2-SMI	A definition file for standard conventions included for reference.
SNMPv2-TC	A definition file for standard conventions included for reference.
Third-Party	
MIB-Dell-10892	The primary MIB for the Polycom-branded Dell server. It provides 36 traps from the server motherboard, including system type, voltages, and temperature readings. For more information, see the Dell SNMP documentation. **Note**: This MIB, while visible on both the Appliance and Virtual Edition, only provides meaningful data when used with the Appliance Edition.